The Development of Financial Inclusion and its Impact on Real GDP Growth Rate in MENA Region (2004 -2022)*

تطور الشمول المالي وأثره على معدل نمو الناتج المحلي الإجمالي الحقيقي في منطقة الشرق الأوسط وشمال إفريقيا خلال الفترة (٢٠٠٤-٢٠٢٢)

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Abstract

Financial inclusion is a crucial concept that ensures all members of the economy have access to formal financial systems and services, promoting economic growth and sustainability. The Middle East and North Africa (MENA) region has limited financial access, making financial inclusion a high priority to promote economic growth and development. This paper investigates the impact of financial inclusion on real GDP growth rate in the (MENA) region over the period from 2004 to 2022. Despite the significance of financial inclusion in promoting economic development, there is a lack of literature on this topic, particularly in the MENA region. The study aims to contribute to the existing literature by presenting the development of Financial inclusion in MENA region during the period (2004-2022), and examining the relationship between financial inclusion and real GDP growth rate in the MENA region. The chosen econometric approach is a linear regression performed on a set of time series data on the dependent variable economic growth and the independent variables of financial inclusion in the MENA region from 2004 to 2022 using OLS method. Our findings suggest that financial inclusion has a positive impact on real GDP growth rate in the MENA region, highlighting the importance of financial inclusion in promoting economic development in this region. The study also identifies factors that may help expand financial inclusion in the MENA region, such as improving access to financial products and services and increasing financial literacy.

Keywords: Financial Inclusion, MENA, GDP, Linear Regression, Economic Growth.

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المستخلص:

الشمول المالي هو مفهوم هام يضمن لجميع أفراد المجتمع الوصول إلى النظم والخدمات المالية الرسمية، وتعزيز النمو الاقتصادي والاستدامة. وتعاني منطقة الشرق الأوسط وشمال أفريقيا من محدودية فرص الحصول على الخدمات المالية، مما يجعل الشمول المالي أولوية قصوى لتعزيز النمو الاقتصادي والتنمية .تبحث هذه الورقة في تأثير الشمول المالي على معدل نمو الناتج المحلي الإجمالي الحقيقي في منطقة الشرق الأوسط وشمال أفريقيا خلال الفترة من 2004إلى2022 .وعلى الرغم من أهمية الشمول المالي في تعزيز التنمية الاقتصادية، إلا أن هناك نقصا في الأدبيات حول هذا الموضوع، لا سيما في منطقة الشرق الأوسط وشمال إفريقيا . وتهدف الورقة إلى المساهمة في الأدبيات الموجودة من خلالعرض التطور في الشمول المالي في منطقة الشرق الأوسط وشمال إفريقيا خلال الفترة (٢٠٠٤-٢٠٢٢)، و دراسة العلاقة بين الشمول المالي ومعدل نمو الناتج المحلي الإجمالي الحقيقي في منطقة الشرق الأوسط وشمال إفريقيا . وقد تم استخدام نموذج الانحدار الخطي المتعدد على مجموعة من بيانات السلاسل الزمنية حول النمو الاقتصادي (متغير التابع) والمتغيرات المستقلة للشمول المالي في منطقة الشرق الأوسط وشمال إفريقيا من 2004 إلى 2022 باستخدام طريقة الانحدار الخطي. وتشير النتائج إلى أن الشمول المالي له تأثير إيجابي على معدل نمو الناتج المحلي الإجمالي الحقيقي في منطقة الشرق الأوسط وشمال أفريقيا، مما يسلط الضوء على أهمية الشمول المالي في تعزيز التنمية الاقتصادية في هذه المنطقة. وتقترح الورقة بعض العوامل التي قد تساعد في توسيع نطاق الشمول المالي في منطقة الشرق الأوسط وشمال أفريقيا، مثل تحسين الوصول إلى المنتجات والخدمات المالية وزيادة الثقافة المالية.

الكلمات المفتاحية :الشمول المالي، منطقة الشرق الأوسط وشمال أفريقيا، الناتج المحلي الإجمالي، الانحدار الخطي المتعدد، النمو الاقتصادي.

Introduction:

Ever since the field of Economics emerged, researchers and decision-makers have continued to be concerned about economic growth. Growth is a necessary component that is essential to a country's development. The world's nations and regions experience varying degrees of well-being, which can be caused by noticeable differences in per capita growth and economic growth rates. Many factors that influence economic growth are currently being investigated because doing so is crucial for resolving a variety of macro issues, including hunger, illiteracy, unemployment, and poverty. Every developing economy needs stable economic growth to maintain a high standard of living and foster long-term sustainable economic growth. As a result, the significance of steady economic growth and important data from previous decades, the idea of financial inclusion has become crucial to economists and decision-makers worldwide (Gul et al., 2019).

Financial inclusion is a relatively new idea that is used by financial institutions to provide the unreached population with financial services to support the nation's sustainable development (Bakar & Sulong, 2018). All members of the economy should have easy access to formal financial systems and services, and this is known as financial inclusion. According to the committee of financial inclusion, financial inclusion represents the method of ensuring that low-income and vulnerable groups, have easy and permanent accessibility to financial services and sufficient credit when needed at a reasonable cost. Ensuring that every household has a bank account and providing for their participation in the banking system constitute the process of financial inclusion. Financial services accessibility encourages social inclusion and increases self-assurance and empowerment (Paramasivan, & Ganeshkumar, 2013).

Because financial inclusion may boost an economy's growth and sustainability, it has drawn significant attention in the development of economic and financial fields worldwide over the years. Millions of people around the world are denied access to formal financial services, which could result in a loss of savings or deposits, investible funds, and ultimately the ability of the global economy to create wealth. It is commonly known that having access to financial services can increase capital accumulation and credit creation, which in turn can increase investment and economic activity. It was asserted that policymakers and officials utilize financial access as a crucial tool to promote economic growth. (Okoye et al., 2017). Financing made accessible and affordable for economic agents leads to an increase in economic activity and, consequently, in output. For inclusive growth, financial inclusion provides a platform for the integration of high- and low-income earners into the financial system. A substantial amount of research has demonstrated that nations with high financial inclusion indices typically have high rates of economic growth and development (Khan, 2011).

In the Middle East and North Africa region known as MENA region, financial access has been scarce. It is known to be a significant limitation. The following features apply to the MENA region: It has small financial penetration, underdeveloped financial markets, bank-based rather than market-based financial markets, inadequate collateral, few secured transactions, and limited access to finance due to all the above. Mena region countries have the least amount of bank financing available, and small businesses are more restricted in their ability to obtain formal financing. As a result, the MENA region has made financial inclusion a higher priority, and this is because there are great growth prospects in this area. (Emara & El Said, 2021).

The purpose of this paper is present the development of Financial inclusion in MENA region (2004-2022), and evaluate the influence of financial inclusion on real GDP growth rate, specifically in the Middle East and South Africa (MENA) region over the study period, as there is a lack of literature prior this period. Our aim is to discuss how financial inclusion can contribute to economic development through the real GDP in the MENA region. As well, many contradictions were found in previous literatures regarding the relationship between financial inclusion and economic growth as some writers claim positive relationship between financial inclusion while others demonstrate that this relationship is quite negative. For this reason, there is persistent need for more research to be conducted regarding the relationship between financial inclusion and real GDP growth rate, especially in the MENA region as it suffers from the financial exclusion and the lack of financial inclusion related literature.

The paper will provide a variety of definitions for financial inclusion, GDP with its two types (nominal and real GDP), concentrating more on the real GDP growth rate. Our research concentrates more on the MENA region as it is a recognized region for low financial access, Access to finance in the MENA region is limited. (Emara & El Said, 2021). The access to financial products and services is one of the challenges of MENA countries, which makes some wonder about the reasons for the decline in financial inclusion in the MENA region; this is one of the questions that we will discuss in this research paper. This paper also determines the factors that might assist in expanding financial inclusion in the region. Problem of financial exclusion is the reason behind paying the attention to the importance of financial inclusion as most of the Middle East and North Africa countries did not have enough financial services and access to formal bank accounts (seifelyazal et al., 2023).

This paper is divided into three sections. Section one introduces the conceptual framework of financial inclusion, and the existing literature encompassing theoretical and empirical analysis on the role of financial inclusion in economic growth, in addition to the condition of financial inclusion in the MENA region. Section two discusses the Development of financial indicators in MENA region during the period (2004-2022), taking into consideration the economic events during this period. Section three describes econometric analysis, data, model specifications and the obtained results. Finally, the conclusion and policy recommendations.

I. Research Objectives:

The objective of this study is to presenting a descriptive analysis of the development of financial inclusion in MENA Region (2004-2022), and identify whether financial inclusion have an impact on the economic growth, and whether that impact is positive or negative. To be more specific and able to draw accurate results, focus was put on the MENA region during certain periods, which are the years from 2004 to 2022 using Real GDP as the indicator for economic growth, which is the dependent variable, while the independent variable, financial inclusion, will be calculated using different dimensions of financial inclusion.

II. Research Significance:

Financial inclusion plays a very important role in reaching and attaining financial development. Financial development helps in improving productivity, raising capital accumulation and reducing poverty. These positive changes tend to promote economic growth on all levels, firms, industries, and national. And as the goal of each country to be able to reach the highest levels of economic growth possible to enjoy better living standards and conditions, financial inclusion holds huge importance in boasting the economic growth. And due to that, the MENA region was chosen to see how it allocates its financial tools and how it benefits from them. (Abid et al., 2016)

III. Research Questions:

The question stated for the research is "What is the development of financial inclusion and its effect on Real GDP growth rate in MENA Region (2004 to 2022)?"

A series of qualitative and quantitative steps and methods will be followed to answer this question.

IV. Research Methodology:

Financial inclusion research is increasingly conducted using both qualitative and quantitative methods, so the paper is going to utilize the qualitative analytical approach to provide a theoretical framework for the relationship between financial inclusion and economic growth as this approach is important to assist with interpreting and comprehending human behavior through data analysis as well as proper analysis of the data produced by the subject's internal characteristics. Since we are directly extracting the trends from the data attributes, there is very little room for error, making it beneficial. The paper also will depend on descriptive Analysis in presenting the development of Financial inclusion in MENA region (2004-2002) with focusing on the most important economic

events happened during this period. Furthermore, it is one of the most crucial processes in the examination of statistical data. It gives you an analysis of the data's distribution, helps you find errors and outliers, and makes it possible for you to see relationships between variables, laying the groundwork for future statistical analysis, therefore simple statistical measures will be calculated to monitor the trend of our variables of interest and summarize the characteristics of the data under study.

As per the chosen econometric approach, a linear regression will be performed on a set of time series data on the dependent variable economic growth and the independent variable financial inclusion in the MENA region from 2004 to 2022 using the OLS method. The chosen Mena region is used to clarify the main challenges and opportunities faced by the region and how the government implemented such policies to expand the financial inclusion in their countries, and because there wasn't much material available before this time, the paper used it between 2004 and 2022.The hypothesis put to the test in the paper is whether financial inclusion relates positively and significantly to economic growth or not.

V. Research Hypothesis

The paper tests the following hypothesis:

"The financial inclusion affects positively in RGDP growth rate"

VI. Part One: Conceptual framework and Literature Overview:

1) Conceptual Framework:

- **Financial Inclusion definitions:**

There is no single widely accepted definition of financial inclusion. However, definitions can be distinguished by their scope based on how far they define financial inclusion as a one dimensional or multi-dimensional notion. Early definitions emphasize how different population categories may use formal financial services, mainly focusing on the "access" dimension. the notion is now more widely defined by contemporary definitions, which cover the usage, pricing, and quality of financial services in addition to access to official financial institutions. The availability or chance to utilize financial services is referred to as the "access" component in these multidimensional definitions of financial inclusion, while the actual usage of these services is referred to as the "use" dimension. Typically, the "cost" aspect of financial inclusion is defined as including expenses that are both indirect and direct, such bank fees or proximity, associated with receiving and using financial services. Lastly, the "quality" component evaluates how well-informed and protected customers are, as well as whether financial services satisfy consumers' demands (Pesqué-Cela et al, 2021).

Financial inclusion refers to offering conveniently accessible and reasonably priced financial services to commercial and retail clients who have been left out of the system. Banks are the main providers of financial services, but the financial sector also includes other financial organizations such as the post office, insurance providers, brokers, investment funds, and so on. The expansion of the financial sector lowers information and transaction costs, which is crucial for simplifying payments, extending credit, mobilizing savings, and managing risk to boost economic growth and lower poverty (Haber, 2005).

Another definition describes financial inclusion as a global array of subject's methods, and theories with the goal of developing inappropriate financial goods and services (Schwittay, 2011).

Financial inclusion is also explained as "the process that ensures the ease of access, availability, and usage of formal financial system for all members of an economy. This definition emphasizes several dimensions of financial inclusion accessibility, availability, and usage of the formal financial system." (Sarma, 2012, p. 3).

The notion of a financially inclusive society was introduced to be one in which everyone could handle daily financial transactions, satisfy unpredictable needs, deal with a loss of earned income, and prevent or minimize problem debt (Kempson,2012).

The UN defines a financial system to be inclusive when it is able to provide a wide range of financial services by several reliable and sustainable organizations to all people at a fair price, where it highlighted the goal of inclusive finance is to improve financial services accessibility for small, medium-sized and microbusinesses as well as people (Financing for Sustainable Development,2024).

The most widely used definition of financial inclusion is one referred to by the World Bank where financial inclusion is defined as having access to efficient, reasonably priced financial services and products that suit individuals' needs—transactions, payments, savings, credit, and insurance—and are provided in an ethical and sustainable manner According to the World Bank's views having access to a transaction account is a first step towards greater financial inclusion. since a transaction account may be used as a gateway to other financial services (World Bank, 2024, May 15).

- **Measuring Financial Inclusion:**

The widely used measurement for financial inclusion is the three-dimensional financial inclusion index (IFI), which incorporates dimensions such as the access or availability of banking services (D1), the penetration and geographical inequality of

banking services in the country dimension (D2)., and usage dimension (D3). The IFI results into a one number for these three dimensions between 0 and 1, where 0 denotes total financial exclusion and 1 indicates complete financial inclusion (Fouad, 2018).

To calculate the index of financial inclusion (IFI) a dimension index for each of these dimensions must be computed first as follows:

- **Access of banking services (D1):** using the number of bank branches per 10,000 population and the number of ATMs per 10,000 population.
- **Financial inclusion penetration dimension(D2):** using number of depositors per 1000 population, the number of borrowers per 1000 population and average size of total deposits per depositor to GDP per capita.
- **Usage of banking dimension (D3):** by computing the volume of deposit as percentage of GDP and the volume of domestic credit as a percentage of GDP.

➢ **Importance:**

Financial inclusion includes all the financial serveries provided not only by banks and other financial institutions, but as well as by financial markets. The easier the access to these services is, the more people will participate in finance. And through finance and financial inclusion a number of objectives or functions are achieved which help with economic growth. Some of which are producing information and capital, allocation of the information and capital in resourceful ways, monitoring investments, mobilization, and pooling of savings, and facilitating diversification and risk management (Barajas et al., 2020).

Studies showed that a country's level of financial inclusion and financial development can be determined by the extent to which the country is performing these objectives or functions. As these functions, when performed correctly, lead to positive outcomes on the economy such as an increase in productivity and higher rates of economic growth. And this is more shown in the financial inclusion role in economic growth by raising savings and expanding investments and entrepreneurship which will lead to business development and job creation. (Barajas et al., 2020).

Another importance of financial inclusion is that through the efficient allocation of resources, there is a potential reduction in capital cost. In addition, easy access to financial services facilitates day-to-day management of finances, as well as reducing the presence of informal sources of credit. This would lead to improving the efficiency and welfare of markets in the countries. Additionally, A study for the World Bank showed that financial inclusion in a crucial factor of competitiveness, especially in the MENA region. As it plays

a role in increasing incomes, alleviating poverty and creating employment (Sarma & Pais, 2011).

With the main goal to achieve the highest attainable economic growth, economic growth is important as it leads to huge positive impacts, most of which are interrelated. Economic growth is essential to keep up with the population growth. As economic growth plays a role in transforming societies and providing better conditions for them. Economic growth helps in reducing poverty, improving education and healthcare system, thus improving the quality of life and in turn the human development will increase (Dfid,2008).

- **Advantages of Financial Inclusion:**

According to the World Bank, financial inclusion has been identified as an enabler for several of the 17 SDGs, especially reducing extreme poverty. It enables low-income individuals to save, thus promoting personal financial security and increasing the use of bank deposits, thus providing banks with tighter fixed deposits in difficult times (Ozili, 2018). Furthermore, it is widely known in developing economies to use informal savings clubs or in the form of jewelry or even cash, unlike saving money at formal institutions like banks, which will encourage better cash management and lessen the risk of theft. This saving advantage of financial inclusion has proven its viability through a field experiment in Kenya, where market vendors saw increases in private expenditures by 38% and business investment by 60% compared to a control group when provided with a private savings account (Dupas & Robinson, 2013). Meanwhile, this study didn't reach the same conclusion for other occupations, but the importance of financial inclusion in increasing savings exerts potential.

Having access to credit is considered an aspect of financial inclusion, where people can borrow money from financial institutions to finance or invest in various personal desires such as: education, businesses, buying a home, or unexpected emergencies. Seeking appropriate financial institutions to borrow funds instead of seeking family and friends, which is a common practice in the MENA region, has many benefits, including having better credit terms than borrowing from an informal lender. It allows low-income households to have access to sufficient funds that they otherwise wouldn't be able to borrow within their community.

- **Disadvantages of Financial Inclusion**

While financial inclusion is usually accompanied by advantages and positive impacts, financial inclusion has its flaws. Financial inclusion is criticized for several things. One

of these things is that financial inclusion doesn't take into consideration that poverty is often associated with bad habits and inaccurate policies that also could hinder financial inclusion. The trends that lead to poverty such as focusing on the present at the future's cost and poor decision-making which would also play a negative role in financial inclusion. Giving an unrestricted or semi-restricted to financial services without correcting or improving the wrong patterns would lead to disastrous results instead of the desired ones. Despite studies showing that financial education and financial literacy aren't very significant in promoting financial inclusion, it's recommended to rather study these behaviors and trends and try to prevent them so financial inclusion is more beneficial (Ozili, 2020).

Another concern arising with financial inclusion is that financial inclusion may lead to the financialization of poverty. The fundamental presumption of financial inclusion to alleviate poverty is through the expansion of financial markets, and that expansion is done through new agents or players entering the financial markets. And with more agents or players in the market, more services and could be offered through them to the poorer communities or those in remote areas. While these services would alleviate poverty, the agents, players, or financial institutions providing these services would be gaining profits thus, financializing poverty. This also may lead to many institutions and businesses to drift to unethical practices that would make the poor dependent on them to maintain the most profit and expose them to the risks of financial markets. In other words, using and increasing poor communities' participation in the formal financial sector in the favor of achieving financial inclusion would accelerate the process of the financialization of poverty (Prabhakar, 2021).

A critique of financial inclusion is that its benefits disappear after a few years. This could be explained through several hypotheses. First being the quick fix hypothesis. The quick fix hypothesis is a regime used by countries or institutions in face of financial or economic crisis to improve the welfare of those affected in the time being by providing benefits such as cash transfer payments, then reducing these benefits after the crisis. While the quick fix regime is a great way to deal with a crisis as it's happening, it may lead to the withdrawal of the affected group and abandoning the financial sector once the benefits are gone and the crisis is over, which in its turn would negatively affect financial inclusion as it opposes the goal of financial inclusion of ensuring that all people are active users in the financial sectors (Ozili, 2020).

The second reason hypothesis is the 'post-achievement slack' hypothesis. This hypothesis argues that after governments successes in achieving its financial inclusion

goals and objectives, it fails to sustain them. It suggests that the government put all its efforts in the infrastructure to achieve the goals but failed to plan how to continue after the financial goals are achieved. And this could be due to many factors, the current program is too expensive or a change in the intensity which financial activities are carried out with (Ozili, 2020).

- **Evolution of financial inclusion:**

The industrial revolution caused a rise in real income in England and then its effect spread in the rest of the world. Historians agreed on the significant impact of the Industrial Revolution on economic growth in the world, but opinions were divided as to whether the impact was negative or positive. Some economists argue that the standard of living of the working class has declined, while others, on the other hand, believe that standards of living have risen. Nowadays, no economist can dispute the fact that the Industrial Revolution is the primary cause of the shift to higher standards of living throughout industrial market economies (Nardinelli, 2018).

Modern economic growth began in the mid-18th century and then spread to all parts of the world during the 19th century. The closer countries were to the center of the industrial revolution, the closer to England, the closer to the ports, the more they were able to escape intense poverty and the more they acquired a better capacity for international trade, and certainly all of this helped to advance the wheel of modern economic growth (Leite, 2015).

Coming to financial inclusion concept, the term of financial inclusion has gained a global importance since the late 1990s and the beginning of 2000s, as many organizations began to offer access to financial services like insurance and savings. This can be considered as a result of the world bank considering financial inclusion as an important enabler to reduce poverty, in addition to considering financial inclusion as an enabler for 7 goals of sustainable development goals (World Bank Group, 2022a).

Indeed, great progress has been achieved in the field of financial inclusion, as between 2011 and 2017, about 1.2 billion adults were able to obtain an account, and as of 2017, 69% of adults in the world were able to obtain access to an account. As a result, millions of poor customers who were suffering from a lack of financial services provided to them move to financial services by using their phone or any means of digital technology to access these financial services. However, nearly a third of adults, approximately 1.7 billion, did not have bank accounts in 2017, especially among women in poor families in rural areas (World Bank Group, 2022a).

To increase the effectiveness of access to financial inclusion, partnerships have been established between government agencies, microfinance institutions, and international companies, in addition to the possibility of reaching remote communities that do not have access to primitive financial services through modern digital finance inventions (Field, 2023).

For instance, the Financial Inclusion Global Initiative "FIGI" was implemented, which is an initiative implemented between the World Bank Group, the Payments Commission, and the International Telecommunication Union, which had a duration of 3 years, with the aim of achieving national financial inclusion goals by 2020 in three countries Egypt, China, and Mexico, funded by the Bill & Melinda Gates Foundation. With the worsening of the Covid-19 crisis in the world, the need for digital financial services has become more urgent as safe and contactless financial tools for companies and individuals considering the pandemic, which has helped to enable social distancing and enable business continuity (World Bank Group, 2022b).

2) Literature Overview:

The connection between financial inclusion and economic growth has been the subject of numerous researches. Because of conflicting findings in the research, the question of whether financial inclusion has a good effect on creating a growing economy is still open. However, while most empirical investigations in both individual and cross-sectional formats corroborate positive effects, few researches contradict this notation.

➢ Studies showing positive relationship:

Wakdok (2018) used an econometric approach to investigate the effects of financial inclusion on economic growth in Nigeria. The theoretical framework of finance-growth theory was used, econometric analysis utilized data acquired from secondary sources that extend from years 1990–2014, with the Error Correction Model serving as the approach for testing the hypotheses. The author saw that Scholars, academics, policy officials, and investors place a high value on the study of financial development and how it affects economic growth and development. From an academic perspective, most of the earlier research in this area focused on evaluating the relationship between investment and economic growth, with a smaller number of studies examining the effect of financial Inclusion on economic growth. This study predicts the main impacts of financial inclusion on the economy and believes that it needs to be investigated separately from other studies. It concluded after applying the econometric model that financial inclusion, as measured by financial inclusion variables like broad money, credit to the private sector, loan deposits

in rural areas, and commercial banks' liquidity ratio, positively and significantly impacts Nigeria's economic growth.

Yones (2018) published regarding financial inclusion. The paper examined financial inclusion in a sample of 23 countries in Middle East and North Africa (MENA) region over the period from 2004 to 2016. The focus of the study is to study the impact of financial inclusion on economic growth and poverty reduction through two panel models. Real GDP, which represents Economic growth, is the dependent variable in both. While multi-dimensional index was used for financial inclusion. The study presented a three-dimensional financial inclusion index, which consists of penetration of banking services in the country, usage, and availability of banking services attaching equal weights to the three dimensions. The study was able to calculate said index for the 23 countries chosen then performed the panel test. The results of the test showed positive significant variables, which some of them were number of depositors, borrowers and bank accounts and credit as percentage of GDP. This indicates the existence of a positive relationship between the financial inclusion and economic growth in the MENA region during this period.

A study by Emara et al. (2019) was published. This study focused on studying the relationship and financial stability of economic growth. They defined the dependent variable to be the real GDP per capita They assigned a set of independent variables which consists of two macroeconomic indicators that are consumer price index and openness of economy, which is measured by the percentage of imports and exports in GDP, then three financial stability indicators which are banking crisis in form of dummy variable (1=banking crisis, 0=none), credit to government and state-owned enterprises to GDP measured in percentage, domestic credit to private sector calculated as a percentage of GDP.. Their dataset was sample of nineteen countries in MENA region over the period 1990 –2014. The data was collected from the World Development Indicator (WDI) and Global Financial Development Database (GFDD) of the World Bank. The methods used were system panel GMM dynamic panel on the sample, principal component analysis to create a composite index of financial stability from the three chosen indicators. The results of the dynamic panel system GMM Of the sample showed that financial stability plays an important role in boosting economic growth in the MENA region. To check on the said result more, they split the sample into oil exporting and non-oil-exporting countries and ran the tests again. After the division of the sample according to oil exportation, the results showed no statistically significant difference between the two groups in terms of the impact of financial stability on economic growth. So, it can be said that the relationship

between financial stability and economic growth is a direct relationship of sorts and isn't affected by oil exports.

Another study by Ain et al. (2020) investigating the relationship between institutions, entrepreneurship, financial inclusion, and economic growth using Generalized Method of Moments (GMM) on a panel data of 33 developing countries including both lower income and lower middle-income countries over the period 2004-2016. The study used natural log of Per capita Gross Domestic Product as a proxy for economic growth which has been defined by the author as the gradual rise of the actual market value of an economy's products and services. Because proxies are thought to be more reliable than index, the study used various proxies of financial inclusion and institutions instead of indices. Two proxies for financial inclusion were used which are Commercial bank branches (CBBs)/100000 adults and Number of ATMs/ 100000 adults. The results demonstrated that financial inclusion has a positive relationship with economic growth where the findings indicated a positive relationship between CBBs/100000 adults and economic growth and this can be further explained that whenever he number of commercial bank branches rises, more people have access to banking services, which in turn improves their capacity to save and invest thus boosting the economy's productive activities and ultimately output, similarly the coefficient of ATMs/ 100000 adults was significant and positive emphasizing the fact that more people have access to banking services once there are more ATMs. More access to banking services translates into investors and savers benefiting more from commercial banks' services, raising the level of financial inclusion, and promoting national growth.

Ali et al. (2021) evaluate how the financial inclusion index (FII), which measures financial inclusion, affects the economic growth of the member nations of the Islamic Development Bank (IsDB). Data on several aspects of financial inclusion and economic growth were gathered between 2000 and 2016.they set up the panel data for 45 countries and estimated the generalized method of moments (GMM), two-stage least squares (2SLS), panel vector autoregressive (VAR), and panel Granger causality tests to produce multi-dimensional results. Their findings from dynamic panel estimations indicate that FII contributes positively to economic growth. Granger causality study results show a unidirectional causal relationship between the FII and economic growth as well as a bidirectional causal relationship between FII indicators and economic growth. Thus, it implies that the financial inclusion index influences the growth of the economies of IsDB member nations in a favorable way. These findings suggest that policymakers should take financial inclusion into account as a long-term driver of economic growth.

An et al. (2021) study investigates the impact of financial development on economic growth in SSA, which is sub-divided into low-, middle- and upper-income groupings to ascertain whether differences in income levels across countries affect the relative impact of finance on growth. The study adopts the dynamic and static panel data model to analyze 30 SSA countries using annual data over the 1985–2015 period. The findings indicate that financial depth and financial intermediation reduce per capita income growth in low- and middle-income countries, they used panel regression, The findings indicate that the financial depth of the financial system and the extent of financial intermediation increase growth in the upper-income and entire sample of SSA countries over the period but reduce the growth of per-capita income in the low- and middle-income countries. Some researchers find that these two variances have a positive relationship with economic growth in a sample of African countries (Allen & Ndikumana, 2000; Levine & Renelt, 1992), The methodology used in this study is a dynamic and static panel data model to analyze 30 SSA countries using annual data over the 1985-2015 period. The findings indicate that financial depth and financial intermediation reduce per capita income growth in low- and middle-income countries. However, it increases growth in upper-income and the overall sample of SSA countries. Credit supply positively impacts growth in low-income countries but exerts a significantly negative impact on growth in middle-income and the overall sample of SSA countries. Financial liberalization promotes growth in upper-income and the overall SSA.

Ben Abdallah et al. (2023) analyzed in their study the effects of traditional and digital financial inclusion on economic growth for a set of 14 of the Middle East and North Africa (MENA) countries between 2000 and 2021. Therefore, this approach antes how digital financial inclusion uses can increase economic growth using and the Pooled Mean Group Auto-Regressive Distributed Lag method (PMG-ARDL) and GMM-System approaches and using an annual panel time-series data for 14 emerging economies of the MENA region. This study investigates how digital financial inclusion uses can increase economic growth. Therefore, the results of this study indicate that digital financial inclusion affects economic growth positively in MENA countries, as there is a stable correlation between these two variables. Moreover, the authors concluded that digital financial inclusion could reduce transaction costs, enhance transparency, and promote financial sector, hence, the digital financial inclusion can promote and improve the efficiency and stability of financial system. Additionally, they found that the effect of financial inclusion on economic growth depends on other factors such as infrastructure and environment.

Jima & Makoni (2023) in attempting to assess the nexus between financial inclusion and economic growth have conducted their study over twenty-six Sub Saharan African (SSA) economies using annual secondary data covering a 20-year period between 2000-2019. Quantitative analysis was applied in their research where they used econometric panel data analysis technique on data obtained from databases of International Monetary Fund (IMF) and the World Bank (WB). The final sample of the 26 countries reflected a good representation of the 48 economies that comprise the SSA region since these countries' selection has taken into consideration their respective income categories (low, middle, high), their geographical distribution and the availability of comprehensive data for the review period. In this paper the authors adopted panel unit root, system generalized method of moment (GMM) and ARDL co-integration tests to assess the stationarity properties, evaluate the factors influencing economic growth and investigate the long run relationship between financial inclusion and economic growth, in addition to utilizing the principal component analysis (PCA) to establish a single composite index as a proxy for financial inclusion including variables such as number of ATMs per 1000 km (squared), number of accounts per 1000 adults, number of branches per 1000 km (squared), geographic spreads of ATMs per 100000 adults, credit to private sector as a percentage of GDP and lastly branches of commercial banks per 100000 adults and consistent with the study objective ln GDP/capita was used as an indicator for economic growth. The empirical results have shown that there is a significant positive long-run relationship between financial inclusion and economic growth and by applying the Granger non-causality tests the results concluded that there is a bi-directional causality between financial inclusion and economic growth suggesting cohesion and mutual complementarity.

Mostafa et al. (2023) studied the influence of financial inclusion on the economic development for 18 countries in the MENA region from 2004 to 2019, by constructing a three-dimension FII (access, usage, and quality of financial services) following the models of Cámara and Tuesta, (2014); (Park and Mercado, 2018) using PCA. The authors seek to evaluate the financial inclusion across the MENA region countries. This study is based on quantitative research methods using secondary data and by using dynamic panel estimates. As a result of this study, an increase in financial inclusion leads to an increase in economic development. Increasing financial inclusion will enable countries in the MENA region to achieve great economic growth. However, Information on financial inclusion indicators is limited.

Yalta & Yalta (2023) studied The Effects of Financial Inclusion on the Economic Development of MENA Countries using the developed a nonlinear and non-parametric Kernel causality for 2017 by employing many measures of financial inclusion. This study analyses causal linkages between economic growth and several financial inclusion indicators in MENA countries. Yalta suggest that the more the share of adults with primary education having an account, the more we will be able to increase the financial inclusion, in addition to arguing that raising the share of women having bank accounts and raising of adults having a mobile account, will lead to increasing financial inclusion in the MENA region. The authors argued that financial inclusion concept is a broad concept and the latest database provided by the World Bank makes it possible to identify many subcategories of financial inclusion, as a result it can maintain more detailed analyses. Yalta et al. concluded that not all indicators of financial inclusion have a significant effect on GDP. They found that gender gap is an important factor and increasing the share of women that have bank accounts causes economic growth. In addition, raising the share of adults having an account with primary education will affect GDP positively. Hence reducing the gender gap and promoting education levels will be good policies for the government to raise economic growth through financial inclusion.

- **Studies showing negative or no relationship:**

In the contrary, A study done by Guidotti & George (1992) paper examined the empirical relationship between long—run growth and the degree of financial development, proxied by the ratio of bank credit to the private sector as a fraction of GDP, this paper is conducted on latin America countries their methodology is using the extend Barro's (1991) cross—country growth regressions for a sample of 98 countries during the period (1960—1985) by including their proxy for financial development as an additional explanatory variable. I/ 2/ Second, using De Gregorio's (1992a) panel data set for 12 Latin American countries during 1950-85, using Barro's (1991) data set the paper found a significantly positive effect of our measure of financial development on long—run growth of real per capita GDP. This positive effect appears to be particularly strong in middle- and low-income countries. The paper also found that the relationship is stronger in the 1960's than in the 1970's and 1980's, Dependent variable: Average GDP per capita growth 1960-85,their findings showed that there is a robust negative relationship exists between financial intermediation and growth these findings are less controversial once one considers that the negative relationship between financial intermediation and growth is obtained for Latin American countries during the 1970s and 1980s, a set of countries and a time period when financial markets were exposed to extreme conditions, in conclusion they suggest that financial development leads to improved growth performance.

Okoye et al. (2017), Using the Ordinary Least Squares method, investigates the impact of financial inclusion on economic growth and development in Nigeria from 1986 to 2015. The loan to deposit ratio, financial deepening indicators, loans to rural areas, and branch network were used in the study for measuring financial inclusion. The study used broad money supply to GDP and private sector credit to GDP as measures of financial deepening. GDP growth over time was used as a proxy for economic growth, and per capita income was chosen as a proxy for poverty and, consequently, as a development indicator. The study's goals are to firstly investigate how financial inclusion affects Nigeria's economic growth and secondly to ascertain how financial inclusion affects Nigeria's efforts to reduce poverty and According to the study's findings, financial inclusion hasn't helped Nigeria's economy grow or reduce poverty in the country.

El Said & Emara (2019) concluded that financial inclusion indicators measured by household access measures, firms access measures and IMF access indicators have positive and statistically significant effect on economic growth measured by GDP per capita growth in a sample of 23 Ems and 21 MENA countries from 1960 to 2015. The two authors used Dynamic Panel System GMM methodology on data collected from the World Bank's database to estimate a relationship between a dependent variable which is real per capita GDP growth rate and set of explanatory variables that include 1-financial access indicators that include dimensions of general financial access, households' financial access, and firms' financial access and 2- inflation rate, growth rate of gross capital formation, government spending (as a percent of GDP), population growth and openness. In the paper, there is a regression model carried out to explore how the changes of financial access affect changes in the growth rate of real GDP per capita by comparing the indicators in MENA region versus other countries. Results have shown that the impact of financial access is only statistically significant if it is followed by other factors in MENA countries such as: availability of bank loans for firms, private sector development, increasing firms access to credit and improvement in institutions quality.

Emara & Mohieldin (2020) used data set of 34 emerging markets and MENA countries, exactly eleven MENA countries and twenty-three Ems over the period 1960-2017 from the World Bank's dataset to perform a system GMM dynamic panel estimation of the dependent variable the poverty head count ratio at $1.90 a day as a percent of the population (*P*ovi,t) on a set of independent variables used such as: annual GDP growth rate, trade as a percentage of GDP, mobile cellular subscriptions per 100 people, inflation rate and the annual population growth rate denoted as Xit-1, financial inclusion indicators denoted as FIit-1 and the lagged poverty variable as Povit-1. The aim of the study was to

analyze the effect of different measures of financial inclusion including access and usage of financial services for both households and firms on extreme poverty, which is the first SDG goal. Results have indicated that households financial access measures have statistically significant impact on reducing extreme poverty for both EMs and MENA countries, meaning that when there is increase in households' financial access measures index there is decrease in poverty head count ratio. On the other hand, households' financial usage measures have only statistical significance in reducing extreme poverty in the full sample of (34 EMs and MENA countries) but not in the MENA sample. For the firms' financial usage measures, results have shown that there is no statistical significance of financial usage measures in reducing extreme poverty neither in the full sample nor in MENA countries. Indicating negative relation between financial inclusion and economic growth.

Khmous &Besim (2020) used probit estimation model to analyze the impact of individuals' characteristics, countries economic development and Islamic banking share (explanatory variables) on indicators of financial inclusion and barriers to formal accounts (dependent variable). The collected data was from the World Bank Global Findex database containing individual-level data originating from a 2014 survey of more than 150,000 adults in 148 countries. Their idea to add Islamic banking share as an explanatory variable is due to the significance of it in the MENA region, and adding the development level is to capture the income level difference between MENA countries. After analyzing a sample of 14 MENA countries; results have shown that, Islamic banking share has a negative effect on financial inclusion, explained in the paper due to factors like: high cost of Sharia-compliant products for individuals and customers' inadequate information about Islamic banks. The analysis indicates that in middle-income countries there is stronger effect of Islamic banking share on financial inclusion and economic growth than high-income countries.

Mansour et al (2023) examining the impact of Financial Inclusion on Economic growth in Egypt has concluded that financial inclusion has no significant effect on economic growth. Egypt has been the country of interest in this study since data obtained from the World Bank has indicated a poor level of financial inclusion before 2017 with nearly 12% of Egyptians and 14% of adults having bank accounts, however, since 2017 there was a significant increase in the percentage of financially included persons due to major improvements in accessibility that led to a sharp decline in the proportion of the perceived obstacles to financial inclusion. The authors applied the Fuzzy Regression method (Probabilistic regression) over annual data covering the period 2004-2019. The study

incorporated variables such as ATMs/ 100000 adults and domestic credit provided to private sectors by banks as a percentage of GDP as indicators for financial inclusion while economic growth was represented by GDP. The negligible relationship between financial inclusion and economic growth in Egypt has been supported by a number of factors such as the passive use of financial services since they primarily rely on salary transfers so the rise in the quantity of ATMs don't seem to be helping the economy grow, in addition to that the financial industry is underdeveloped in Egypt and it remains difficult to establish a supervisory framework for micro lending organizations and lastly opening bank branches in rural and remote areas remains highly challenging and thus denying access to financial services in such areas.

In conclusion, after the examination of the literature presented in this review, it shows the complexity and multifaceted nature of the relationship between financial inclusion and economic growth. While the existing studies provide valuable insights into how different financial inclusion measures affect economic growth positively or negatively or even have very minimal effect on economic growth considered to be almost insignificant, it is evident that a definitive consensus or conclusive evidence has yet to be reached. The divergent findings and methodological differences among the reviewed studies emphasize the need for more research in this area.

VII. The Development of Financial Inclusion in MENA region (2004-2024)

During our period under study 3 main economic events have occurred that are strongly and significantly related to our main variable of interest Financial inclusion and have globally impacted various economies with notable repercussions on the Middle East and North Africa region and in accordance with that the paper has divided our period into 3 sub periods using these global cutting points: The Global Financial Crisis (2008), Sustainable Development Goals implementation(2015) and COVID-19 epidemic (2020). Through the following analysis the paper is going to demonstrate how these significant events had affected the five variables measuring Financial inclusion: Commercial bank branches per 100000 adults, Automated teller machines per 100000 adults, Depositors with commercial banks per 1000 adults, Borrowers from commercial banks per 1000 adults, Domestic Credit to private sector (% of GDP) in the Mena region, considering that all data were extracted from the World Bank, and the study will use these variable in calculating the three dimensions of the financial inclusion.

- **The First period (2004-2012): -**

The global financial crisis of 2008 was the worst shock to the economy in almost 70 years. Most countries had output losses in comparison to pre-crisis levels, and some experienced serious banking problems because of the panic (Nabar, 2019).

One of the most important lessons from the global financial crisis (GFC) of 2007–2009 was the need to control systemic financial risk and preserve financial stability. In line with this, increased financial inclusion may help maintain financial stability, where increasing lending to smaller businesses, expanding the number of small savers and including those from low-income backgrounds in the financial sector enhance financial stability and lead to a better transmission of monetary policy (Fildefonso, 2024).

- **The Second period (2012-2017): -**

The 2030 Sustainable Development Goals (SDGs) include financial inclusion as one of the goals that must be met by 2030. In the SDGs, financial inclusion is positioned prominently as a goal that supports other developmental objectives; in fact, it is a target in eight of the seventeen goals including SDG1 to eradicate poverty, the SDG2 to achieve food security, end hunger, and promote sustainable agriculture, SDG 3 to advance health and well-being, SDG 5 to achieve gender equality and women's economic empowerment, SDG 8 to advance economic growth and jobs, SDG 9 to support industry, innovation, and infrastructure, SDG10 to reduce inequality Furthermore, there is an implied role for increased financial inclusion through increased savings mobilization for consumption and investment that can promote growth under SDG 17, which is focused on enhancing the means of implementation (Financial Inclusion and the SDGs - UN Capital Development Fund (UNCDF, 2024).

However, there is a distinct and significant connection between SDG 1—the eradication of poverty—and financial inclusion, particularly in the Mena area, where financial inclusion is seen as a powerful instrument for achieving SDG 1 targets. In terms of extreme poverty and according to the most recent World Bank data, MENA region comes in third among developing nations. The percentage of the population living on less than $1.90 per day increased from 2.6% to 5% between 2011 and 2015. SDG 1, which aims to eradicate poverty in all of its forms, makes clear how crucial it is to have access to financial services. The development and promotion of the infrastructure required for the widespread provision of financial services is the focus of policy considerations, particularly for the MENA nations that are falling short of the targets set forth to end extreme poverty (Emara & Moheildin, 2020).

- **The Third Period (2017- 2022): -**

By extending financial services into disadvantaged regions, the COVID-19 pandemic has enhanced the likelihood that Fintech will play a larger role in economies through financial inclusion services and sustainable development. Historically, digital payments have played a significant role in promoting financial inclusion. In response to COVID-19, these payments have been extended in numerous countries. Data indicates that the COVID-19 situation has led to an increase in digital payments, which is accelerating the spread of digital financial inclusion (World Bank Group, 2021).

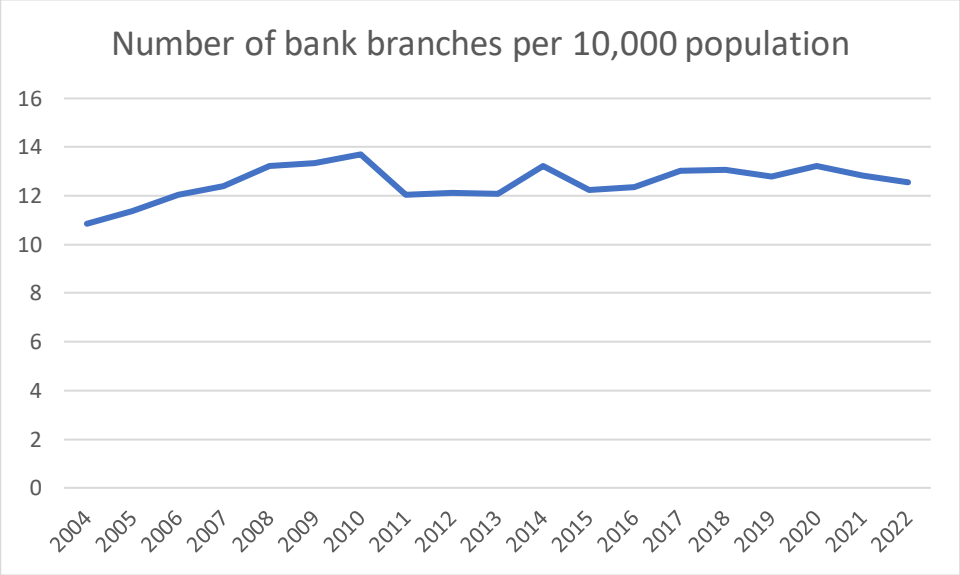
One of the entrants to the Fintech sector in this fresh era of growth is the Middle East and North Africa (MENA). The MENA region has witnessed a notable increase in Fintech companies during the global pandemic, contributing to the notable annual growth in the Fintech market. In order to support the growth of Fintech—which is crucial to fostering the Fintech industry's prosperity in order to expand the availability of financial services and enhance financial inclusion—the majority of Mena countries have demonstrated an increasing trend in the adoption of technology in the financial services sector (Naz et al., 2022).

- **The First Variable: Commercial bank branches per 100000 adults: -**

According to the world bank, Commercial bank branches are separate external units that act as retail locations for resident banks to provide financial services to customers and provide the opportunity to generate more profit for resident banks. These branches have the highest level of career opportunities by providing banking services and representation in many areas, especially those remote areas. These branches are legally connected to the main office but physically separate from it.

The number of commercial bank branches per 100,000 adults in a country is calculated as (number of institutions + number of branches) *100,000/number of adult populations in that country. These branches reduce financing obstacles for companies and individuals, which also means providing access to financing and credit, which leads to the establishment of a stable financial system that enhances the efficiency of saving and investment and works to develop the market economy (world Bank Data, 2024, April 14)

Figure (1): The Commercial bank branches per 100000 adults in MENA region (2004 -2022)



Source: World Bank Data (2024)

During the great recession **2004-2012**, thousands of banks failed all over the world. From the graph, the commercial bank branches were growing at approximately increasing rates starting from 2004 until 2006. It increased from 10.85 branches per 100,000 adults in 2004 to 12.05 branches in 2006 which means an increase by 0.11. On the other hand, during the 2007-2009 funding crisis, commercial bank branches increased by 0.077. Consequently, the rate of increase in commercial bank branches decreased through the global financial crisis (Antoniades,2015).

The number of commercial bank branches became almost constant from 2011 until 2013. looking at the changes in commercial bank branches in 2010-2011 period, we can see the same decline in the rate as the commercial bank branches declined by 0.12.

As for the second period, starting from **2012 until 2017**, it revolves around whether setting sustainable development goals in 2015 helped increase financial inclusion, and here the paper will analyze it from the chart through the variable of commercial bank branches in the MENA region. Goal 8 is to Promote sustained, inclusive, and sustainable economic growth, and to promote the capacity of domestic financial institutions to expand access to insurance, banking, and financial services.

The branches of commercial banks in these countries witnessed a noticeable increase between the years 2013 and 2014, as they increased from 12,095 until they reached 13.23, that is, they increased by 0.093 in one year. After that, the index returned to its normal growth rate, that is, it increases in increasing proportions approximately depending on the size of the increase for each year until 2017. This means that after setting

the sustainable development goals in 2015, the branches of commercial banks did not witness a noticeable change and their growth was stable in the countries of the region.

For the third period Which relates to the impact of the Corona virus from **2017-2022** on financial inclusion indicators in the Mena region, Commercial bank branches witnessed a decrease in the rate, as it decreased in 2019 to reach 12.8 after it was 13.08 in 2018. But during the Corona pandemic in 2020, the branches increased again to reach 13.24. Although the region's economy soon began to recover, bank branches declined again from 13.24 until they reached 12.83 in 2021.

- **The Second Variable: Automated teller machines per 100000 adults: -**

As the world keeps changing, the financial industry and banking business need to keep developing and evolving to meet up with the fast changes and growing demands. With the great progress happening, technology made its way to the financial market to help in offering the services in a more efficient way to help both the companies and the consumers. One of these forms of technology is Automated teller machines, publicly known as ATMs. ATMs are devices which are located and spread across public places to allow people to perform some financial and banking services anywhere near them. The self-serving machines are used for cash transactions whether cash withdrawal, cash deposit, or account checking. However, they are mostly used and beneficial for cash withdrawal. Despite starting off as a simple idea of "hole-in-the-wall machine" to help in financial transactions which was discontinued and reinvented many times through the years, ATMs have grown to be very important and quite essential nowadays (Yarlikas, 2009).

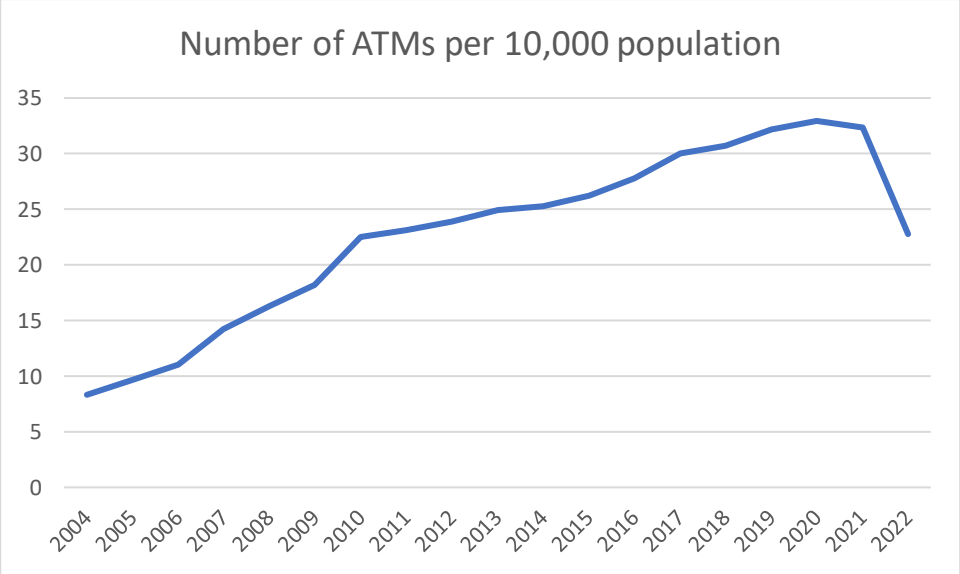
Like how they provide people access to their bank accounts and cash transactions without the need to visit a bank branch, ATMs represent a part of an important aspect regarding financial inclusion, which is the access to financial inclusion. ATMs are a tool that supports financial inclusion greatly. And that's done through many ways such as controlling financial services and transactions from the nearest spot which allow people to monitor their expenses easily and expanding and reaching people beyond bank branches in different types of areas, especially those who rely on cash (Ozili, 2021).

To understand more, data regarding the number of Automated teller machines (ATMs) (per 100,000 adults) in the MENA region in the period of 18 years, from 2004 to 2022, was used to analyze the change in the ATMs over years, and in turn could be used to study the changes in financial inclusion in comparison with the percentage of annual GPD growth in the same period. And how economic events in different periods affected this variable.

Looking at figure (2), the rise in the number of ATMs in the MENA region shows that more focus and attention were given to financial inclusion over the years, indicating that the importance of financial inclusion kept increasing and the need to provide more and easy access to financial inclusion increased in the region as well.

Now dividing the years into three periods to understand the changes and the effect of important events on the number of Automated teller machines (ATMs) (per 100,000 adults).

Figure (2): Automated teller machines per 100000 adults and GDP from 2004 to 2022



Source: World Bank Data (2024)

The period of the global financial crisis **2004-2012** witnessed the global financial crisis of 2008. the crisis left hard consequences to deal with, the graph showed that the number of ATMs tended to increase in this period, starting from 8.325 in 2004, which is the lowest number in the 18 years, until reaching 23.87 in 2012 which is almost three times more that in 2004.

Studies explained this increase by analyzing the banking sectors in the region in the said period. It explained that the region was able to maintain a somewhat banking stability and this is mainly due to the Islamic banks in the region that remained more stable and profitable after the crisis. While no bank was operating fully efficient in this period, Islamic banks along with some conventional banks were able to continue performing and improving, allowing this increase to happen (Trad et al., 2017).

The period of SDG **2012-2017** is mainly characterized by the implementation of the United Nations' sustainable development goals of 2023 in 2015. These goals have a

variety of objectives that aim to improve the standard of living in lots of aspects. And financial systems are one of the ways to achieve that. The number of ATMs increased from 23.87 in 2012 to 29.99 in 2017 in the MENA region. Studies showed that increasing access to credit and financial services plays a positive role in reducing inequalities, ending poverty and reducing the extreme gaps between people. More access to financial services would lead to better allocation of resources for individuals and firms. Studies also showed that financial inclusion has a positive effect on the size of gross capital formation in some sectors. All this would help achieve the SDGS faster and reach higher levels of development (Emara & Rojas, 2020).

Also, by increasing the number of ATMs available to the people, an increase in financial literacy may happen which will lead more people participating in the financial markets, promoting more economic growth (Kara et al.,2021).

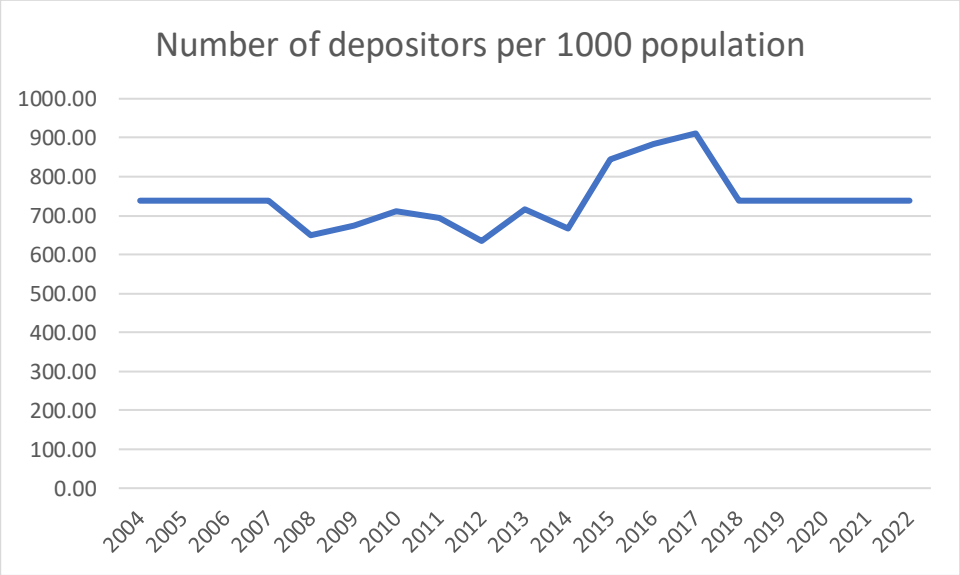
One of the most challenging events occurred in the period of Covid-19 and the pandemic **2017-2022**, making all the countries fall and suffer from something that was never expected. However, the number of ATMs kept increasing in this period as well. And this could be explained by need to provide people access to credit and cash remotely and without going the bank. This resulted in increasing the number of ATMs in 2020 to 32.94 and producing more technically advanced machines to provide more services to the customers (Mateev et al. 2023).

Also, studies showed that bank stability depended on the level of market concentration especially during the pandemic. And due to the presence of many Islamic banks in the MENA which are often characterized by stability and efficiency, banking services were able to function semi-well in the MENA region during this period. However, all banks faced challenges and inefficiencies during the pandemic (Mateev. et al. 2024).

- **The Third Variable: Number of depositors per 1000 adults: -**

Commercial banks rely on deposits from various sources including households, businesses (both public and private), and even other banks. The number of depositors per 1,000 adults in a country serves as an indicator of this. This metric is calculated by dividing the total number of depositors by the adult population and multiplying by 1,000. There are three main types of deposits: checking, savings, and time deposits.

Figure (3) The Number of depositors per 1000 adults (2004 – 2022)



Source: World Bank Data (2024)

First, during the global financial crisis period from **2004-2012**. Interestingly, the number of depositors at commercial banks exhibited a surprising pattern during a recent economic downturn, as the number of depositors remained relatively stable. However, a sharp decline coincided with the start of the 2008 recession in the United States. This suggests a potential link between the financial crisis and the decrease in depositors. Research points to liquidity risk, a risk associated with a bank's ability to meet its short-term financial obligations, as a key factor in bank failures during this period in the Middle East and North Africa (MENA) region. Since liquidity risk is directly tied to deposits, it strengthens the argument that the decline in depositors was likely a consequence of the financial crisis (Ghenimi et.al, 2017).

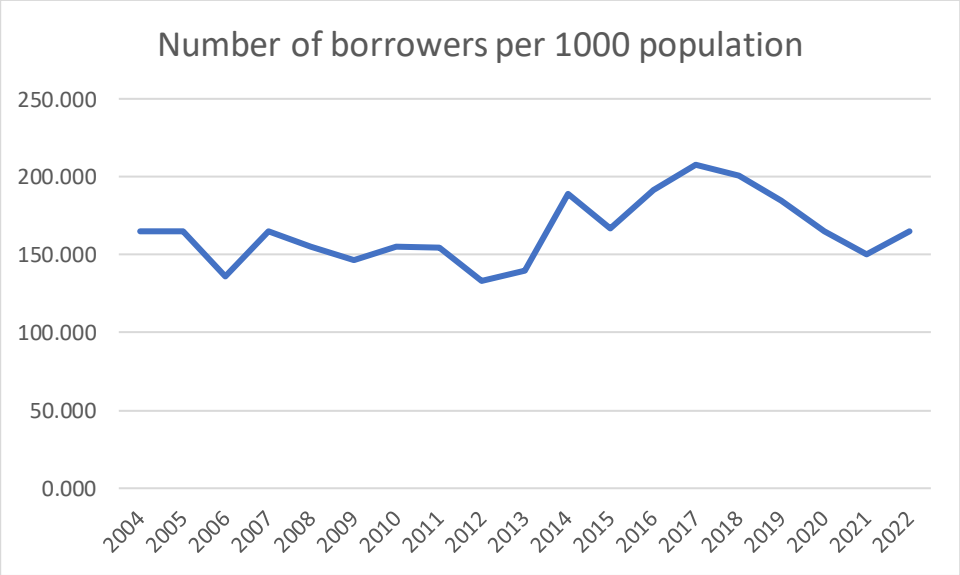
The relationship between depositors and economic well-being becomes even more intriguing after 2012. During the global SDG period **2012-2017**, the number of depositors mirrored the fluctuations in GDP, much like during the earlier period. Studies conducted on a global scale demonstrate a statistically significant positive impact of depositors per capita on poverty reduction, one of the primary goals of the Sustainable Development Goals (SDGs). In fact, these studies suggest that an increase of one thousand depositors per adult population can lead to a 2.02% decrease in the poverty headcount ratio and by looking to the graph we can observe that in 2015 which was the year of implementing the SDG, our variable goes in an upward trend which also aligns with the GDP, following the next year we would see that GDP starts to fall down and then fluctuate till 2017 but our variable goes in the opposite direction going in an upward trend.

Examining the trend of depositors in commercial banks per 1000 adults during the COVID-19 period from **2017-2022** we can notice that there was notable surge in depositors in 2017 followed by a sharp decrease in 2018 till 2019 when COVID-19 kicked in. the graph reveals a seemingly stable pattern since 2019, suggesting resilience in depositor behavior amidst economic uncertainty however It's important to note that the data during this period was missing and mean imputation was used to estimate these values. So, this doesn't fully capture the true fluctuations experienced during the pandemic as the emergence of the COVID-19 epidemic had a huge impact on the relationship between banks and their depositors. The negative impact on bank depositors in the MENA region in 2019-2020 was owing to several factors such as increased uncertainty over job security and income predictability that led to a decline in the available disposable income available for savings and deposit, also shifts in customer behavior and preferences during the pandemic—such as a greater propensity for digital payments or online financial services—moved money from traditional deposit accounts to these new financial platforms or technologies (Saif-Alyousfi, 2024).

- **The Fourth Variable: Borrowers from Commercial Banks (per 1000 population): -**

According to the World Bank, the number of borrowers from commercial banks index reports the number of resident customers and households that are nonfinancial public and private firms that obtained loans from commercial banks, calculated for MENA countries using the total number of loan accounts.

Figure (4) The Borrowers from Commercial Banks (per 1000 population) from 2004 to 2022



Source: World Bank Data (2024)

The overall trend of the variable throughout **2004-2012** period, exhibits constant fluctuations relative to other periods, with the maximum observation equal to 165 borrowers per 1000 population, and the minimum value recorded during this period is 133 borrowers per 1000 population, which is the lowest observation recorded for this variable throughout 2004-2022. This nearly stable to decreasing trend can be surely explained by the global financial crisis, where individuals tend to draw down their credit lines from banks and the volume of new loans approved by banks to borrowers tends to be generally low or slow in growth. The reduction in this index during this period can be explained from two sides: the drained liquidity from commercial banks' systems due to borrowers who drew their credit lines, meaning that banks will tend to be more conservative in granting loans, especially with uncertain expectations regarding economic growth (Ivashina and Scharfstein, 2009). On the other hand, demand for loans from the borrowers' side tends to be lower due to fear of unemployment, layoffs, and reduced disposable income.

During the period **2012-2017**, the graph exhibits an increasing trend from the previous period, with a peak in 2017 recording 208 borrowers from commercial banks per 1000 population, which is the highest value recorded throughout the whole graph. This period exhibits large fluctuations relative to other periods, with a peak in 2014 and a trough in 2015, which can be explained in accordance with the beginnings of the 2030 agenda for sustainable development in 2015 and increased interest in eradicating poverty and promoting financial inclusion in MENA region and globally. Although, the results of a study conducted by Emara (2020) that analyzed financial inclusion and extreme poverty in the MENA region from 1960 to 2017 indicated no statistical significance of the index number of borrowers in reducing extreme poverty in the MENA region (SDG 1)

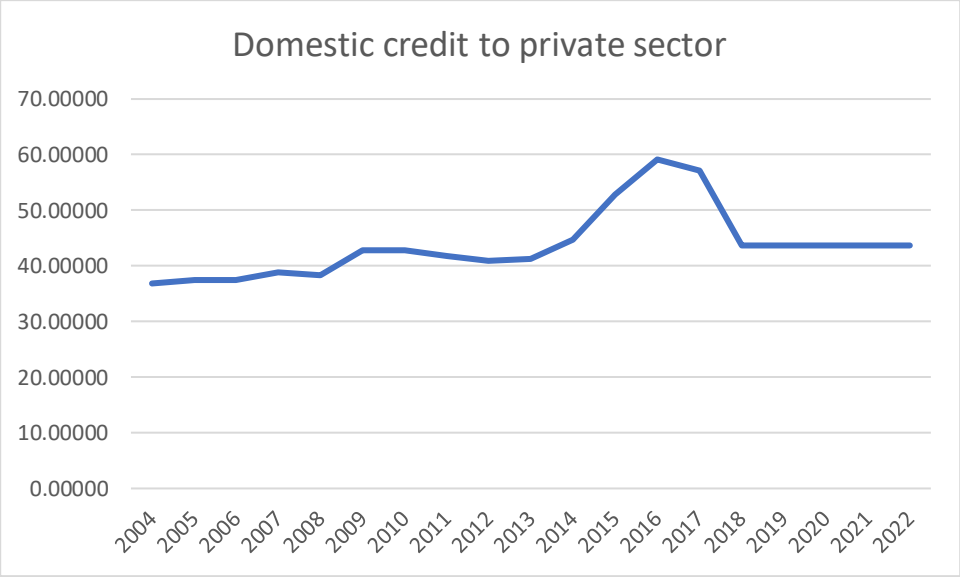
From **2017 to 2022**, there is a clear decreasing trend in the values of the index, which begins in 2017 and continues into 2022. The decreasing trend during this period doesn't necessarily indicate a reduction in the index values generally, as the general trend of the index from 2004 to 2016 has shifted upward starting in 2017, which indicates improvements in the number of loans granted to nonfinancial corporations by commercial banks. This is evident in an IMF report that mentions the systemwide moratoriums on loan repayments for selected borrowers in most countries in the MENA region, while several countries relaxed prudential requirements during COVID-19 (Al-hassan et al.,2022).

- **The Fifth Variable: Domestic Credit to the private sector: -**

Then we have the fifth variable to measure the financial inclusion the Domestic credit to the private sector by banks. It refers to the funds given to the private sector by

other depository corporations (deposit taking corporations, excluding central banks), such as trade credits, buying of nonequity securities, loans, and other receivables, which create a claim for repayment. Some countries' claims involve credit to public companies. Credit plays a significant role in money transmission since it funds manufacturing, consumption, and capital development, all of which have an impact on economic activity. Private sector growth and investment are crucial to poverty alleviation. Parallel to public sector initiatives, private investment, particularly in competitive sectors, has significant potential to contribute to growth (World Bank, 2024, May 15).

Figure (5) The Domestic Credit to the private sector from 2004 to 2022



Source: World Bank Data (2024)

Prior to the 2008 international financial crisis **(2004-2012),** there was an excess of global liquidity and a fast increase of credit, particularly in the private sector. However, as a result of the global financial crisis, the banking system reduced its lending to the private sector, as banks attempted to strengthen balance sheets damaged by a decrease in asset values, absorbing the growing amount of nonperforming loans, and reducing overall risk through deleveraging. As a result, Bank lending growth has slowed substantially in real terms and is expected to stay low in most major economies and countries (Aisen & Franken, 2010). The main shock hitting most countries was a slowdown in deposits and capital, which limited banks' ability to lend.

The adoption of the SDGS in **2012-2017** by the united nation for achieving 17 goals led to a consistent increase in the following the year 2015, and the graphs is showing a strong and consistent increase throughout the observed period.

This strong increase can be related to several factors that significantly affected the credit to and from the private sector. For example, encouraging financial inclusion and credit availability for underbanked communities to help accomplish the Sustainable Development Goals and boost domestic credit to businesses in the private sector. Businesses in the MENA region sought to implement sustainable practices and aid in the accomplishment of the SDGs to obtain a competitive edge in their individual markets, as these businesses grew and expanded, there was a rise in the demand for financing from financial institutions. In addition, The MENA region's governments put policies and initiatives into place to help accomplish the SDGs. These included guarantees, financial incentives, and subsidies to entice the private sector to invest in sustainable development projects. A rise in domestic credit to the private sector resulted indirectly from this support (Ben Hassen &EI Bilali, 2022).

All these elements worked together to boost the amount of credit given to private sector organizations supporting the SDGs in the area. Finally, leading to boosting output capacity and, ultimately, GDP growth. As more domestic credit extended to the private sector encouraged investment since it gave companies greater access to money for expenditure and as shown in the graphs has persisted for an extended period, as both variables experienced steady growth.

Relatively and according to data in the world bank, some of the countries with the highest credit to private sector in 2016 following the implementation of the SDGS was Qatar, UAE and Saudi Arabia with 70.82 percent of the GDP to Qatar, while Yemen was recorded as the lowest country with domestic credit to the private sector. because Yemen was dealing with serious political and economic issues, such as civil instability and violence, which made it difficult for the private sector to invest and obtain finance (Singh et al., 2022).

In the Middle East and North Africa area, the COVID-19 pandemic **2017-2022** has had a major effect on the amount of credit extended to the private sector. The International Monetary Fund claims that the pandemic has caused a significant decline in economic activity throughout MENA region, raising credit risk and making it harder for the private sector to obtain financing (Azour, 2020). Many governments in the MENA area have implemented various support measures, such as interest rate reductions, credit guarantees, and liquidity injections to support financial institutions, in an effort to lessen the impact of the pandemic (OECD, 2020).

VIII. Econometric Model of the effect of financial inclusion index and its dimensions on real GDP growth rate in MENA region (2004 – 2022):

1) Model Specification: -

As per the chosen econometric approach, a linear regression will be performed on a set of time series data on the dependent variable economic growth and the independent variables of financial inclusion in the MENA region from 2004 to 2022 using OLS method. **The hypothesis put to the test in the paper is whether financial inclusion relates positively and significantly to economic growth or not**.

- **Variables identification and measurement:**

The study will run a regression Model to test the relationship between Real GDP growth rate and the three dimensions of the financial inclusion. The used variables and indicators of the initial model are presented in a table as follows:

$$\textbf{Real GDP growth rate } (Y_{it}) = \beta 0 + \beta 1\ Y_{t-1} + \beta 2\ D_{1it} + \beta 3\ D_{2it} + \beta 4\ D_{3it} + \varepsilon$$

Table (1): First Model Specification

Variable	Definition	Indicators used to Measure the Variable
Dependent Variable **(Y_{it})**	-	• Real GDP per capita growth rate
First Independent Variable **(Y_{it-1})**	The lag of the independent variable	• Real GDP per capita growth rate
Second Independent Variable **(D_{1it})**	The access dimension of financial inclusion	• Number of bank branches per 10,000 population • Number of ATMs per 10,000 population
Third Independent variable **(D_{2it})**	The financial inclusion penetration dimension	• Number of depositors per 1000 population • Number of borrowers per 1000 population
Fourth independent variable **(D_{3it})**	Usage of banking dimension of financial inclusion	• Domestic credit to private sector

Source: Prepared by Authors

The data were collected from international secondary data and national datasets across countries may vary in variables computation, some countries don't provide national trusted, strong datasets, and the paper is based on a set of MENA countries, so we are using the world indicators of the World Bank, IMF Financial Access Survey, Global Findex for conducting both qualitative and quantitative analysis.

2) Empirical Analysis and Results

2.1Diagnosis Tests

2.1.1 Multicollinearity test:

The following table examines the multicollinearity between the financial inclusion index dimensions together.

Table (2): Multicollinearity test Result

Variance Inflation Factors
Date: 05/14/24 Time: 04:58
Sample: 2004 2021
Included observations: 18

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	1.315235	7.656904	NA
D1	1.463923	2.343009	1.430755
D2	4.148810	10.01563	1.538092
D3	4.315258	4.357865	1.963941

Source: Prepared by authors using E-views 12

The above results suggest that the regressed model doesn't include multicollinearity within the explanatory variables, as the centered VIF measure is less than 10 for all observations. No multicollinearity of independent variables indicates the ability of each explanatory variable to explain different relations with the real GDP growth rate.

2.1.2 **Autocorrelation test**

The below matrix inspects the autocorrelation between the financial inclusion index dimensions together and the real GDP per capita growth rate (dependent variable).

Table (3): Autocorrelation test Result

Covariance Analysis: Ordinary
Date: 05/14/24 Time: 05:48
Sample: 2004 2021
Included observations: 18

Correlation	D1	D2	D3	Y
D1	1.000000			
D2	-0.005043	1.000000		
D3	0.465675	0.521063	1.000000	
Y	-0.222533	-0.657134	-0.269753	1.000000

Source: Prepared by authors using E-views 12

Due to the existence of autocorrelation in the initial model, the final model used the values of the lagged dependent variable as an independent variable to solve this problem. The presence of autocorrelation in the data used is normal due to the nature of the data (time series). The above table indicates that using lagged values of real GDP growth rate solved the autocorrelation of variables with all observations values less than 1.

2.1.3 **Homoscedasticity test:**

The following table inspects the homoscedasticity using Breusch-Pagen-Godfrey test to test homoscedasticity of both independent and dependent variables.

Table (4): Homoscedasticity test Result

Heteroskedasticity Test: Breusch-Pagan-Godfrey
Null hypothesis: Homoskedasticity

F-statistic	0.903868	Prob. F(4,12)	0.4920
Obs*R-squared	3.936035	Prob. Chi-Square(4)	0.4147
Scaled explained SS	3.014322	Prob. Chi-Square(4)	0.5554

Source: Prepared by authors using E-views 12

From the given table, the model is homoscedastic, due to accepting the null hypothesis. As the p-value of the chi-square test is greater than 10%.

All diagnosis tests conducted indicate the validity of the financial inclusion dimensions in explaining the variability of the dependent variable real GDP growth rate during the specified period in MENA region.

2.1.4 **Stationarity test**

The following table examines the stationarity of the financial inclusion index at second difference used in the model.

Table (5): Stationarity test results

Null Hypothesis: Unit root (individual unit root process)
Series: D1ND, D2ND, D3ND
Date: 05/14/24 Time: 01:21
Sample: 2004 2021
Exogenous variables: Individual effects, individual linear trends
User-specified maximum lags
Automatic lag length selection based on SIC: 0 to 2
Total number of observations: 42
Cross-sections included: 3

Method	Statistic	Prob.**
ADF - Fisher Chi-square	28.3811	0.0001
ADF - Choi Z-stat	-3.88892	0.0001

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

Intermediate ADF test results UNTITLED

Series	Prob.	Lag	Max Lag	Obs
D1ND	0.0449	1	3	14
D2ND	0.0003	0	3	15
D3ND	0.0577	2	3	13

Source: Prepared by authors using E-views 12

Using the Augmented Dickey-Fuller test (ADF), it is shown the dimensions are stationary at second difference only. The above results suggest that both variables are ARIMA models.

2.2Regression Model and Results

The following tables and results explain the relationship between the dimensions of financial inclusion index and the dependent variable the real GDP growth rate in MENA region during 2004 to 2022 using OLS estimation method after conducting diagnosis tests and variables used found to be fitting the BLUE assumptions.

Table (6): Regression Results

Dependent Variable: Y
Method: Least Squares
Date: 05/14/24 Time: 04:59
Sample (adjusted): 2005 2021
Included observations: 17 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.387109	2.744889	3.419850	0.0051
D1	0.448372	1.899176	0.236088	0.8173
D2	-12.71168	3.980606	-3.193402	0.0077
D3	1.330260	2.151861	0.618191	0.5480
Y(-1)	-0.799584	0.454357	-1.759817	0.1039

R-squared	0.552521	Mean dependent var	1.041618
Adjusted R-squared	0.403361	S.D. dependent var	2.157016
S.E. of regression	1.666131	Akaike info criterion	4.098814
Sum squared resid	33.31191	Schwarz criterion	4.343877
Log likelihood	-29.83992	Hannan-Quinn criter.	4.123174
F-statistic	3.704225	Durbin-Watson stat	2.347861
Prob(F-statistic)	0.034644		

Source: prepared by authors using E-views12

From **table (6),** the access dimension **(D1)** shows positive coefficient of .448 but insignificant impact on real GDP growth rate (using $\alpha = 0.1$), the penetration dimension **(D2)** exhibits significant negative impact on real GDP growth rate, with a 12.7% decrease will lead to 1% increase in the GDP growth rate on average. On the other hand, the usage of banks dimension **(D3),** shows a positive coefficient of 1.33, which indicates a 1.33% increase in the Domestic credit to private sector index will lead to a 1% increase in real GDP growth rate. While the real GDP growth rate in MENA region on average is 9.38 when all dimensions equal zero.

Results

After conducting indicational analysis and performing a linear regression on the available data which consider Real GDP per capita growth rate as the dependent variable and the access, penetration, and usage of banking dimensions of financial inclusion, which include five variables, as the independent variables, the paper found that IFI results into

0.422 for these three dimensions which indicates medium level of financial inclusion for the MENA region between 2004 and 2022.

It is shown that the answer for the hypothesis stated in the paper is that financial inclusion has a positively significant relationship with the economic growth in the MENA region, that is explained through the statistical tests and regression model. As when the dimensions of financial inclusion and their dependent variable are regressed, separately, on the real GDP per capita growth rate, some showed positive insignificance like the access dimension (D1) as its variables have negative coefficients. Other showed positive significance like the usage of banks dimension(D3) whose variable has a positive coefficient. However, the penetration dimension (D2) shows to have a negative significance on real GDP growth rate as well as its dependent variables. Also, the real GDP growth rate in MENA region on average is 9.38 when all dimensions equal zero. This overall cause financial inclusion to positively affect the economic growth in the MENA region.

The statistical tests help in identifying some properties regarding the financial inclusion's dimensions and the dependent variables in the region. The diagnostic test shows that the data is stationary for both the variables and dimensions, which accurate results can be concluded from the data which would lead to factual forecasting. The multicollinearity test supports this, as no multicollinearity is detected within the variables, further helping to give accurate results.

While the autocorrelation test proved the existence of autocorrelation due to the nature of the data, the final model used lagged values of real GDP growth rate which solved the autocorrelation of variables with all observations values less than 1. Lastly the homoscedasticity test which concluded the dimensions is homoscedastic. And since the p-value of the chi-square test is greater than 10%, the null hypothesis is accepted. Financial inclusion has a positively significant relationship with the economic growth in the MENA region.

IX. Conclusion and Recommendations: -

Conclusion

Financial inclusion plays a critical role in fostering economic growth in the MENA region. By providing access to financial services to all people and businesses, financial inclusion helps reduce poverty, foster entrepreneurship, and improve overall economic stability. Countries with higher levels of financial inclusion tend to experience higher GDP growth rates and greater investment opportunities.

Moreover, financial inclusion helps reduce income inequality by giving marginalized groups the opportunity to participate in the formal economy. This leads to a more inclusive society where everyone has the opportunity to access credit, save money, and invest in their future. This will make overall economic growth in the MENA region more sustainable and resilient to external shocks.

Fostering financial inclusion is essential to driving economic growth in the MENA region. By expanding access to financial services, countries can unlock the full potential of their populations, spur innovation, and create a more prosperous future for all. Policymakers and financial institutions must work together to ensure that everyone has the opportunity to participate in and benefit from the region's economic development.

This paper tackled the development of financial inclusion and its effect and relationship with economic growth in the Middle East & North Africa (MENA) region during the period of 18 years from 2004 to 2022. By applying the linear regression analysis, the paper concluded that financial inclusion has a positively significant relationship with the economic growth in the MENA region (204-2022).

Recommendation

Some recommendations based on the results were included. These recommendations aim to improve financial inclusion and its effect on economic growth and achieve the highest outcome possible.

Revisiting fundamental changes of the inclusive financial system to reduce existing barriers and give simple access to available financial services for long-term economic growth. Moreover, a thorough understanding of financial inclusion may assist financial sector regulatory authorities in designing policies that ensure efficient allocation of available resources from the less productive sector to the more productive sector, as well as implementing policies that ensure inclusive and equitable access to financial services, thereby reducing poverty and promoting income equality and economic growth (Hussain et al., 2024).

Government should have an important role in this situation, as governments in developing and impoverished nations must guarantee that financial services are accessible to those with lower incomes and less education, rather than relying on individuals to contact financial institutions. It must be a proactive process, not a reactive one. Governments in these countries should emphasize enhancing financial inclusion through

appropriate channels. Additionally, financial inclusion programs should be accessible to underserved groups to maximize benefits (Pal & Bandyopadhyay, 2022).

Financial inclusion should be prioritized in economic and financial policy, and educational institutions should be encouraged to serve as hubs for the eradication of financial illiteracy. This is on top of giving infrastructure development top priority and improving disclosure and openness in banking transactions. Moreover, to offer the technical assistance needed for national financial inclusion policies to be successful, policymakers should focus on stepping up their collaboration with international organizations that address issues related to financial inclusion.it is also suggested to simplify the processes businesses must follow in order to establish a separate funding source, as this will increase the financial inclusion process's ability to impact the growth of the economy (Mansour et al., 2023).

Future MENA strategies ought to incorporate technical advancement and creative financial instruments. Initially, higher-tech ATMs should be installed throughout the MENA region to encourage more use of the financial system. Second, the banking sector ought to provide new financial instruments to draw in customers and boost the number of bank accounts and depositors to boost the amount of money accessible there and spur economic growth (Fouad, 2018).

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