The Effect of Financial Development on Unemployment in Egypt

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Abstract

Since the global financial crisis of 2007–2009, there has been growing evidence pointing to a disappearing, and even adverse, effect of financial sectors at high levels of spread and growth could be damaged by too much finance. This study shifts attention to labor market outcomes and investigates whether high levels of financial development lead to unemployment. Hence, the study empirically investigates the financial development effect on unemployment in Egypt. Using annual data for the sample period of 1990–2021,and with utilizing the Autoregressive Distributed Lag (ARDL), bound test, and the short-term error correction test (ECM) to examine the short and long-run effects.

Nevertheless, the study has perceived the first empirical evidence within time-series analysis of the effect that financial development exerts on unemployment in Egypt. In particular, the domestic credit to the private sector has a negative effect on unemployment. Stock market capitalization has a positive effect on unemployment, while the lending-deposit spread did not exert any significant effect on unemployment in Egypt. Based on this base, proposed policies were included to promote the financial development associated with decreased unemployment rates more effectively.

keywords: Financial development; Unemployment; growth; Egypt; ARDL; ECM.

1. Introduction

Over the new millennium with its new age of globalization that has witnessed the recent developments through the financial and economic sectors passing by the 2008 global financial crisis, it turns out through a large body of evidence that financial system development plays a vital part in countries' economies. Financial development involves improvements in such functions provided by the financial systems as (i) pooling of savings; (ii) allocating capital to productive investments; (iii) monitoring those investments; (iv) risk diversification; and (v) exchange of goods and services (Levine, 2005). Those improvements would have a very important role in the macroeconomic performance. Especially taking place on the economic growth and employment. The countries which have developed financial systems have also high growth rates (Kanberoğlu, 2014). By means of a developed financial system, credit markets can provide more funds and then would push the real sector investments to increase. Credit and deposit volume that affects the real economy through accelerating consumption and investment causes high growth and low unemployment rates (Göçer et.al., 2015).

Nevertheless, Egypt’s labor market has been facing a supply surplus over the past years. The unemployment gap has been wider since the working force gets equivalent to the labor demand side at a low-level equilibrium trap.leaving unemployed people behind while the labor force is growing. However, reasons such as the skills mismatch between job requirements and the qualifications of job seekers seems to be the one that explains the chronic surplus rates over the past years. Although Egypt’s economic performance has been uneven, even in periods of robust growth, unemployment has remained stubbornly high.

Wherefore, main concerned argument is that unemployment is somehow dependent on the degree of the financial development. However, the key issues here can be represented through three major questions: first, Is there financial development effect on unemployment in Egypt? Second, shall Egypt promote financial deepening onto reduce unemployment? Third, how can the financial sector be enhanced to decrease unemployment rate?

Therewith, study importanceis to claim two different aspects. Namely, on the theoretical one, financial system is considered to be critical regarding the financial flow, crucial in order toefficiently allocate idle resources to the most promising investments.Maintaining considerable profound repercussions on both therate and level of increase of economic activity. Moreover, since unemployment is relatively close to the reasoning concerned. Unemployment is linked to the potential GDP gap, which conceptually, is a complex process. Complexity of this gap is mainly derived from the constraints that are faced by in the emerging and developing economies. On one hand, lack of capital is on top of these constraints, which exerts negative impact on the extent of the full employment level. On the other hand, the practical essence is more advocated for the potency of having a well-functioning financial system and toshade light on the efficiency and depth of the financial system's functionality effect on unemployment rates over the period of 1990–2021.

Mainly, the objective of the study is to search and analyze how the financial system has been affecting the labor market through unemployment rates. Measuring the FD by three well-theoretical established proxies. Accordingly, this study tests the mainly approached hypothesis “There is a negative financial development effect on unemployment rates in Egypt during

the period of 1990-2021". However, Autoregressive Distributed Lag (ARDL), bound test, and the short-term error correction test (ECM) were all utilized to examine the short and long-run effects.

Therefore, the study then approaches the previous literature review; shading lights on the development of the financial development indicators and unemployment rates during the study period; formulating the utilized econometric model and the data sources; estimating the econometric model and demonstrating its results; and finally, providing conclusion remarks and policy recommendations.

2.Literature Review

Fundamentally, contemplating the analysis that lies at the intersection of thefinancial development and unemployment,begins with providing theoretical linkages and channels through which developing financial intermediation could affects unemployment, which possibly run through investment and entrepreneurship and eventually lead to increased labor demand. Thereupon, examining the empirical studies concerning the effects of financial development on unemployment using different test techniques and various proxies for financial development.

2.1Theoretical Review

Historically, financial sector turmoil and unemployment have a close link that was first sighted, with The Great Depression of 1929 - 1933, which caused massive job destructions, production declined by **25%**, the price level fell below **30%** and unemployment reached **25%** of the labor force, and about 9000 banks closed operations (Bordo, 2000). While it was affected massively

once again through the 2008 financial crisis and the subsequent recession has caused massive job destructions that require recreating over 20 million new worldwide jobs (ILO, 2010).

A great deal of research, however, suggest that the functions of financial institutions, such as loan granting and deposit acceptance, are increasingly considered as possessing the potential for poverty and unemployment alleviation in an economy through rising productivity(Zhuang et al., 2009). Private sector credit for innovation, investment, and production considerably checks the unemployment rate (Dormel, 2010). And by far those activities of the financial sector may have a great impact on the unemployment issue. Since it lowers the cost of external financing and makes credit available to more businesses, it encourages investment. Given that capital and labor complement each other, employment is adjusted for increases in capital. In a similar vein credit market flaws may influence enterprises' labor decisions and, as thus, hindering employment.

Nevertheless, Market defects (including adjustment expenses as well as information asymmetries), play a crucial role in the economic cycle. This explains why financial factors have an impact on firm labor demand. Financial constraints induced by information asymmetries make firms' labor demand dependent on their balance-sheet position, as demonstrated by (Arnold, 2002).Therefore, unemployment could fluctuate according to the financial pressures that firms face.

However, the argument does not end by disclosing an adequate fact concerning the positive impact of financial development on growth. Some academics and international organizations claim that the occasional disruption, usually caused

by a malfunctioning financial system, has the potential to weaken the economy and lead to significant increases in unemployment and poverty. The 2008 Global Financial Crisis is the most recent financial turmoil that has driven academics to reconsider their optimistic view of the financial development. This is because both developed and developing, had significant drops in economic activity during the GFC, which resulted in job losses, deepening poverty, and broadened inequality (Raifu, 2019).

Moreover, recent years have revealed evidence of a dominant trend and a strong empirically positive relationship between financial development and economic growth (**Suleiman**et al., 2021). Some authors go so far as to claim that financial development not only accelerates economic growth but also helps to create more jobs (Raifuet al., 2019). Nevertheless, in addition to the growth channel, there are several other ways that imperfections in the credit market may affect unemployment. The first one has to do with investing. Financial institutions' capability to efficiently intermediate the credit market is hindered **by** asymmetric information, which also stresses borrowing restrictions on those who lack the wealth to put up collateral and those who lack close connections.

There are, however, two different theoretical stances on how financial development influences the labor markets, particularly unemployment. One of the theories that assumes frictionless financial markets holds that as the financial sector develops, unemployment will decline. Less credit restrictions apply in a financial environment free of friction. In other words, there is no issue with asymmetric information regarding credit availability and costs between borrowers (firms or households) and lenders (financial institutions,

particularly banks). Therefore, increased financial development results in easier access to credit and lower borrowingcosts.

Thus, financial development provides that companies are entitled to credit, boosting their investments, output, and employment (Dromel et al., 2010). This implies that access to credit at low costs enables firms to make informed investment decisions, boast their productivity and create more jobs in the economy (Raifu et al., 2019). Credit market imperfections are the second theoretical perspective by which financial development influences unemployment. Credit constraints stem from asymmetric information between borrowers and lenders, which occurs when the financial market is characterized by imperfections. When businesses find themselves in this situation, it is impossible for them to make decisions on investments, produce output, and create jobs. Young entrepreneurs' lack of access to credit discourages the formation of new businesses, which could have resulted in new investment and job opportunities. Therefore, financial development tends to make unemployment worse whenever there are credit constraints (Dromel et al., 2010).

In addition, financial development constraints may contribute to unemploymentdue to political considerations and incumbent interests. Acemoglu et al. (2005) made the case that the incumbents (current investors), who have benefited from rent-seeking opportunities, may be opposed to financial reforms that would ensure financial market competitiveness and raise the level of financial development. A financial development deficiency prevents the creation of new investments and employment opportunities. Furthermore, some academics contend that the type of

investment made by businesses will determine whether financial development will result in decreased unemployment. According to Pagano and Pica (2012), whether businesses invest in labor- or capital-intensive technology determines how effective financial development is at lowering unemployment. The output could increase but no jobs would be created if the businesses used the credit they received from the financial institutions on capital-intensive technology (jobless growth).

However, unemployment would decline if businesses made investments in labor-intensive technology. Therefore, financial development can lower unemployment when businesses only invest in labor-intensive technology. Further arguing by Pagano and Pica, (2012) that the financial sector tends to become too risky for the economy as it becomes more sophisticated. The more advanced the financial sector becomes, the more it engages in excessive risk-taking, which in turn could lead to financial instability.Anyhow, this logically concentrated coloration has been proven by several studies in different countries, although the results were various.

2.2Empirical Review

In one of these earliest studies, **Gatti and Vaubourg, (2009)**results imply that stock market capitalization had negative impact on unemployment. However, **Dromel et al., (2010)**, founded that credit market imperfections would significantly increase unemployment. And with the examined study of **Pagano and Pica, (2012)** which implies that that financial development is associated within a positive employment growth in the developed countries, unlike the case in the developing ones which tended to prefer the capitalist intensity shifting. Also, **Shabbir et al., (2012)** study has tended to conclude

that financial development has a negative correlation with the unemployment rates. While **Aliero et al., (2013)** empirical findings suggest that there is a positive relationship between unemployment and financial development.

And with a later study by **Kanberoğlu, (2014),** results have ascertained the negative relationship between unemployment and financial development. While the study of **Ilo, (2015)** confirms that capital market development significantly fails to curtail unemployment as expected, disregarding the fact that the capital market has perhaps been expanding at the expense of job creation and employment-generating investments. However, economic growth had a negative and significant impact on unemployment during this period in Nigeria. Moreover, **Ogbeide et al., (2015)** revealed that there is a positive relationship between unemployment and banking sector development.

However, moving into exclusive studies that are derived from more recent verifiable evidence. The study by **Borsi, (2016),** which its drawn conclusions, deducted that indeed private credit contraction on labor market performance affected the unemployment rate positively over the period (1980–2013). The sample of 20 OCED countries whose financial development proxied by the private credit to GDP, current account to GDP. Whereby, empirical findings suggest that a decline in private credit can generate sizable and statistically significant increases in three different measures of unemployment. Furthermore, credit contractions were found to be associated with a rigid labor market institutions that lead to disproportionately greater increases in unemployment.

On the other hand, a curious study by **Bayar, (2016),** who ended his analysis on a sample consisting of 16 emerging market economies, including

Egypt, during the period (2001–2014). And by using the Wester Lund-Durbin-Hausman (2008) cointegration test. The panel's long run cointegrating coefficients indicated that financial development had no significant impact on unemployment. However, individual cointegrating coefficients indicated that financial development had a negative impact on unemployment in Egypt, the Czech Republic, Brazil, Malaysia, Qatar, and Russia. While financial development had a positive impact on unemployment in Hungary and Mexico, during the 2001–2014 period. Furthermore, the Dumitrescu and Hurlin's (2012) causality test denoted a one-way causal relationship from financial development to unemployment. He utilized two proxies as independent variables. Namely, the Domestic credit to private sector (percent of GDP) and the Gross capital formation (percent of GDP).

In another empirical findings by **Çiftçioğlu and Bein, (2017)**. By applying Granger causality tests on a sample of an annual paneled dataset consisted of 10 EU countries, including not only most of the largest economies of the EU but also some of the economies that have had persistently high rates of unemployment, particularly since 2008. The investigated countries were Germany, France, the UK, Italy, Spain, Greece, Portugal, Poland, Sweden, and Finland. The study's sample period was 1991–2012, using sourced data from the World Bank's World Development Indicator 2014 database. And by using three alternative proxies to measure financial development. These proxies are, respectively, 'domestic credit to the private sector as a percentage of GDP', 'domestic credit provided by the financial sector as a percentage of GDP, and 'domestic credit to the private sector by banks as a percentage of GDP'. Ultimately, all three alternative proxy measures were negatively associated

with the unemployment rate. Although empirically detailed findings suggest that unemployment rate and financial development are negatively correlated, there is a statistically significant causal effect of financial development on unemployment in certain countries, but not all of them.

Furthermore, **Kim et al., (2018)** investigated the effect of the credit market on unemployment rates in 49 industrial and developing countries over the period (1991–2014), using a paneled data of both developed and developing countries. Proxying the financial development by two proxies. The first was the value of credits by financial intermediaries to the private sector divided by GDP, and the second was the value of total shares traded on the stock market exchange divided by GDP, which are sourced from the World Bank Global Financial Development database. Ending their results that show the positive impact of financial development on unemployment and concluded thatfinancial development increases with unemployment rates.

Using various financial development indicators and employing ARDL as a method of estimation, it was found that only financial system deposits to GDP have the potentiality to reduce the unemployment rate in the short-run and the long-run. However, Credit to the private sector only reduced the unemployment rate in the short run in Nigeria during the period (1970–2016) by **Raifu et al., (2019)** whoend-up conclusion was that the results are sensitive to the proxy of financial development. Nevertheless, the impact of financial development on employment through the unemployment rate by **Bui, (2020)** was examined on six ASEAN countries, including Indonesia, Malaysia, Thailand, Singapore, the Philippines, and Vietnam, during the period 2004–2017, and by using the generalized method of moment (GMM) to estimate the research model. His

based analysis on the fact that a high unemployment rate will reflect employment losses, and vice versa. Ending his study with a mixed-up result, he found that domestic credit to the private sector had a negative impact on unemployment rates. Meanwhile, the stock market's capitalization had a positive impact on unemployment rates.

However, asymmetric influence findings were reached by **Ajide, (2020)** with the use of Non-linear NARDL, a new technique that decomposes financial variables of interest into positive and negative components in a bid to ascertain their impacts on the dependent variable dynamically. Findings conclude that the financial development positive effective (decreases unemployment) are more when compared with the negative ones (increases unemployment) in Nigeria over a period of 20 years (1980–2017). Utilizing LCFD as a natural log of the Broad-Based Financial Development Index developed by the IMF and sourced from the IMF financial statistics database.

Chen et al. (2021) used data from 97 OECD and non-OECD countries for a period from (1991-2015) to examine whether an excess of finance has a negative impact on unemployment. They reported three different findings using the GMM estimation method. First, they discovered that excessive government spending worsens unemployment, particularly in nations with more rigid labor markets. Second, they found that excessively or insufficiently market-oriented financial systems make unemployment worse. Third, they also found that excessive credit granted to private businesses makes unemployment worse, especially in economies with more rigid labor markets. However, **Raifu and Afolabi (2022)** examined the effect of financial development on the distribution of employment in emerging market countries taking into

consideration the age groups and gender dichotomy. Their findings show that financial development has a reducing effect on the distribution of unemployment, albeit the reducing effect of financial development on unemployment varies across the working-age population and youths.

Last but not least, the study of **Azolibe et al., (2022),** their empirical findings suggest that there is a positive relationship between unemployment and financial development, which was proxied by Banking system credit [Domestic credit provided by banks (% of GDP)].Other micro variables such as the Lending rate; Inflation rate; Government expenditure [General Government final consumption expenditure (% of GDP)]; Population growth rate (annual %); and Foreign direct investment, net inflows (% of GDP) was utilized as control variables. And by using the ARDL testing technique for cointegration that was applied to estimate the long-run relationship in the period of (1980–2011) as time-series data in Nigeria. Results showed that banking system credit has a positive and insignificant relationship with unemployment rate in Nigeria but has a negative and significant relationship with unemployment rate in South Africa. On one hand, it acknowledged the fact that most individuals in Nigeria who are opportune to obtain credit from banks tend to divert the loans to unproductive ventures such as acquiring expensive cars, private apartment, and other luxuries rather than investing it in employment driven projects.On the other hand, the South Africa monetary authorities are more stringent in ensuring that credits given out by banks are monitored and utilized for the purpose for which they are meant for and thus raising investment that are employment driven.

While the **Raifu et al., (2023)** study investigates the effect of financial development on different components of unemployment (total (adult and youth) and gender (male and female) in MENA. Capturing financial development with the IMF composite financial development index andfor robustness, they computed an index of financial development from different measures of financial development made available by the World Bank. However, results show that financial development has a significant negative effect on unemployment.

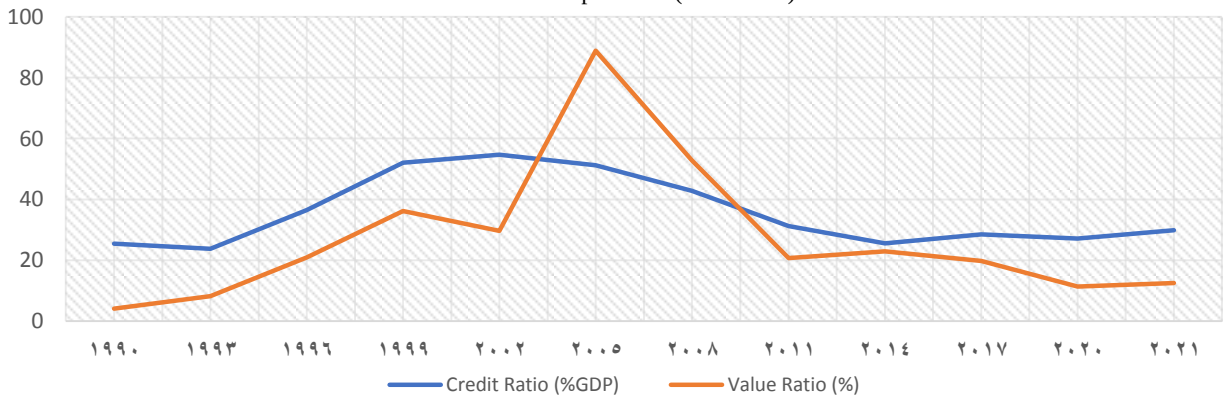
Nevertheless, from an empirical perspective, most of the previously reviewedstudies are conducted for panels of countries. The problem is that the findings from such studies cannot be generalized, and if it could be, this can lead to policy bias. The rationale for this is that the individual country has its financial structure and institutional arrangement and is at a different level of economic and financial development. These factors are likely to determine the ultimate effect of financial development on unemployment.; however, the results are not quite unambiguous. The inconclusive findings in the existing studies could be attributed to several factors which include the choice of the financial developmentproxy.

Nevertheless, thecontribution of this study does not lie only within providing the first empirical time-series analysis of the potential effect of the financial sector in Egypt within more sophisticated evidence. But also, providing a new dimensional aspect as the financial efficiency beside the common depth one. Such new measuredgaugefor the financial efficiency is considered as anew filled gap that contributes to the financial development literature for the best of knowledge.

3.The Evolution of Egypt's Financial Sectors Development and Unemployment Rates.

In terms of the evolution of credit market during the 1990s, Egypt has adopted financial liberalization as a prominent theme. However, due to the fact that financial intermediaries have been freed from several previous restrictions, the increased provision of financial services has been remarkably growing during the period of 1993–2000, within an average of 38.9% of GDP compared to the earliest three years of this decade, which reached an average of 23.3% of GDP. Nevertheless, credit ratios started to worsen drastically in 2001, as it has registered 54.9% of GDP compared to the ratio in 2010, which registered a sharp decrease rate by 33.1% of GDP. Given the fact that even when lending interest rates were declining constantly, from 13.8% in 2001 to 11% by the end of 2010, granted credit for the private sector ratios were still decreasing. Moreover, the Egyptian sector had several shocks in the last decade of this period, starting in 2011. Granted credit ratios have gotten worsened, and service volume has depreciated. Although it has registered the highest granted credit of 82.8 $ billion in the whole period, the average ratio presented only 28% of GDP.

Figure (1): Credit Ratio to Private Sector (%GDP) - Stock Market Value Capitalization (% Of GDP) Over the period of (1990-2021)

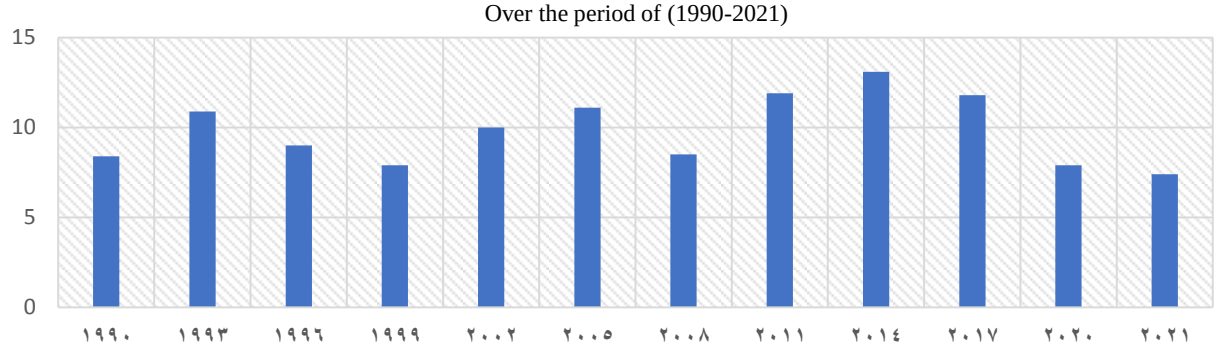


Source: The World Bank, World Development Indicators

Simultaneously, on a different scale, the value stock ratios of all listed companies to Rose in the first decade. However, in the first decade of the period, ratios were clearly escalating to record an average of 16% of GDP. Although startup ratios of the first two years in the second decade were falling, ratios went up dramatically, registering an average of 72.8% of GDP during the period 2002–2008. However, ratios went sharply down since the 2008 financial crisis had tumbled stock markets all over the world. Which could be observed clearly by comparing the ratio of 2007 to 2008, which registered 106.8% of GDP, to 52.8% of GDP in 2008. However, the startup ratios in the third decade were slightly recovering. The 2011 revolution did no favor as ratios were dearly falling, registering 20.7% of GDP. Nevertheless, as the rest of this decade went on, ratios went far worse, reaching their lowest value of an average of 17.1% of GDP. However, the ratio of 2021 was no different than the previous ones, as it has been shown that the value ratio of all listed companies' stock nearly represented 12.5% of GDP.

Since the early 1990s,the Egyptian labor market has not been at its best. unemployment has been a major socioeconomic challenge due to a lack of employment opportunities (Labor-Demand side) and an increase in labor force growth (Labor-Supply side). It has been acknowledged that it has aggravated in the range of 8–11% through economic cycles, major structural changes, and several external shocks. On one hand, the economic reforms at the mid of this period lifted the growth profile; on the other hand, the unemployment content of growth was weak. Moreover, through the earliest 2000s, unemployment rates worsened as growth stagnated, reaching their highest rate then by 11.1%.

Figure (2): Unemployment Rates (%)
Over the period of (1990-2021)



Source: The World Bank, World Development Indicators

However, in the middle of this period, investment and growth were starting to loosen up from 2005 in reaction to the broad-based economic reform program that the government began to implement. Thereupon, unemployment rates were constantly declining, from 11.1% to 8.5% by the end of 2008. However, due to the September 2008 financial crisis, unemployment rates got a little worse and reached 8.8% by the end of 2010. Nevertheless, unemployment rose sharply to reach 11.9% in 2011 and kept on rising to reach its highest rate in 2014 by 13.1%. Conversely, unemployment rates have been starting to recover since the beginning of 2015, with an annual average change of -0.95%. ending 2021 by 7.4%, which is considered the lowest rate during the whole period.

4.Model Specification, characterization of variables and Data Sources

4.1Model Specification and Characterization of Variables

However, Levine et al. (2000) indicate that neither private credit ratio nor financial depth can effectively capture the role of financial system in ameliorating market frictions and channeling capital to the most productive investments alone. The financial efficiency feature of financial development

evaluates the ability of institutions to provide financial services at a low cost. This ability is viewed in accordance with sustainable revenues and the level of activity in the financial markets (Svirydzenka, 2016).

Fundamentally, several indicators for financial development have been proposed in the literature to capture different aspects and functions of the financial system, as has been previously provisioned. A perfect measure of financial structure does not exist in the literature. Hence, three measures of financial development will be used as proxies that include both the banking sector and stock markets sector indicators.Financial depth is the size of banks, other financial institutions, and financial markets in a country. Taken together and compared to a measure of economic output. It is recommended to be chosen as an essential dimension for both the financial institution and markets because of its relative economic aspects.Following the main theme of literature with some modifications, the study applies econometric modelling in which the effect of the financial development on unemployment could be examined. This approach will provide more investigated further insights on the linkages between both financial development and unemployment.

The General Based line model is estimated thus

$$\mathbf{UNEM} = \boldsymbol{\beta_{0+}\beta_1}\mathbf{INF} + \boldsymbol{\beta_2}\mathbf{FD} + \boldsymbol{\beta_3}\mathbf{EGR} + \boldsymbol{\beta_4}\mathbf{FDI} + \varepsilon$$

The study is based on measuring the Financial Development **FD**by several proxies' which regarded as the independent variables, that measures the level of financial development **Depth** that will be proxies by the **P**rivate **S**ector **C**redit to GDP **(PSCD),S**tock **M**arket **C**apitalization to GDP **(SMCD).**The level of **Efficiency** will be proxied by the **L**ending-**D**eposit **S**pread **(LDSE).**

Therefore, our econometric model is formulated as follow…

$$\mathbf{UNEM} = \boldsymbol{\beta_{0+}\beta_1}\ \mathbf{INF} + \boldsymbol{\beta_2}\ \mathbf{PSCD} + \boldsymbol{\beta_3}\ \mathbf{SMCD} + \boldsymbol{\beta_4}\ \mathbf{LDSE} + \boldsymbol{\beta_5}\ \mathbf{EGR} + \boldsymbol{\beta_6}\mathbf{FDI} + \varepsilon$$

Where, **UNEM**is theunemployment rate (Dependent variable). Which will be represented as percentages of the people above the specified age who are not in paid employment or self-employment but are currently available for work. (% of the total labor force). As for the Independent variables, **INF** isthe inflation rate, while **PSCD** is the Private Sector Credit to GDP (Domestic private credit to the real sector by deposit money banks as a percentage of local currency (GDP),**SMCD** is the total value of all publicly listed and traded stocks in a market as a percentage of local currency (GDP).**EGR** is the economic growth rate, **FDI** is the Foreign direct investment, net inflows (% of GDP).

Following the literature, **Private Sector Credit to (GDP)** is a proxy variable approximated for the financial depth through the financial institutions (banks, insurance companies, etc.). It has been chosen among the rest of the alternatives since it has received much attention in the empirical literature following (Dromel, 2010; Pagano and Pica, 2012; Shabbir et al., 2012; Aliero et al., 2013; Kanberoğlu, 2014; Ogbeide et al., 2015; Borsi, 2016; Bayar, 2016; Çiftçioğlu and Bein 2017; Kim et al., 2018; Raifu, 2019; and Bui, 2020). And in the case of Egypt, Despite the large size of the Egyptian private sector, it contributes about 72% of GDP and absorbs about 78.4% of employment, it is a sector that faces structural challenges that limit its ability to advance development (Abdel-Razek, 2021).

Stock Market Capitalization to (GDP)is a proxy variable approximated for the financial depth of the financial markets (stocks) following (Gatti and

Vaubourg, 2009; Pagano and Pica, 2012; Shabbir et al., 2012; Kanberoğlu, 2014; Ilo, 2015; and Bui, 2020). It is a measure of the total valueof all publicly listed and traded stocks in a market divided by gross domestic product (GDP). The ratio compares the value of all stocks at an aggregate level to the value of the country's total. Thirdly, **Lending-Deposit Spread** is a proxy variable approximated for financial efficiency through the financial institution (banks). It is a measure of the difference between lending interest and deposit interest. However, it has been chosen out of the belief that, in terms of its fluctuations, it could stimulate the efficiency of the intermediation process between both savers and investors.

4.2 Data Sources

The empirical examination of the effect of financial development on unemployment in Egypt relies on the use of an annual data series that includes several variables involving the financial sector and macroeconomic indicators from the World Development Indicators Database (WDI) over the period (1990-2021).

5. Models Estimation and Results

To investigate the financial development effect on unemployment, the study will apply; First, the unit root test to investigate the properties of the time-series of each series. Second, co-integration using autoregressive distributed lag model (ARDL) bounds test, and the error correction model (ECM) approaches to confirm long-run relationship and short-run dynamics, respectively. Thirdly, the diagnostic test, to investigate the robustness of the estimated model.

5.1 Descriptive Statistics

Table (1) – Descriptive summary statistics

	UNEM	PSCD	INF	EGR	FDI	LDSE	SMCD
Mean	**10.00313**	**36.53226**	**9.871875**	**4.365625**	**2.287500**	**5.171875**	**29.80258**
Median	**9.650000**	**33.10000**	**9.400000**	**4.450000**	**1.500000**	**5.100000**	**21.37000**
Maximum	**13.10000**	**54.90000**	**29.50000**	**7.200000**	**9.300000**	**8.300000**	**106.8000**
Minimum	**7.400000**	**22.10000**	**2.300000**	**1.100000**	**-0.200000**	**2.000000**	**4.080000**
Std. Dev.	**1.729532**	**11.60283**	**5.930198**	**1.555761**	**2.251129**	**1.307111**	**24.96519**
Observations	**32**	**31**	**32**	**32**	**32**	**32**	**31**

Source: Researchers Calculation

Hence, the financial development indicators descriptive statistics results showed that **Private sector credit to GDP (PSCD)** has the highest mean of (36.5) with a standard deviation of (11.6) among the study variables and outliers of maximum (54.9) and minimum of (22.1). While **Stock Market Capitalization** (**SMCD**) statistics showed the second highest mean of (29.8) among other variables and a standard deviation of (24.9), outliers with maximum of (106.8) and minimum of (4). Also, the **Lending-Deposit spread (LDSE)** showed a mean of (5.2) with a standard deviation of (1.3) and outliers of maximum (8.3) and minimum of (2).

Also, **Unemployment (UNEM)** showed a mean of (10) with standard deviation of (1.7) and outliers of maximum (13.1) and minimum of (7.4).**Inflation Rate(INFL)**showed a mean of (9.9) with a standard deviation of (6) and outliers of maximum (29.5) and minimum of (2.3). While**Economic Growth Rate (EGR)** showed a mean of (4.7) with a standard deviation of (1.5) and outliers of maximum (7.2) and minimum of (1.1). However, **Foreign**

Direct Investment (FDI)showed the lowest mean of (2.3) with a standard deviation of (0.3) and outliers of maximum (9.3)and minimum of (-0.2).

5.2Stationarity Test

To test whether the series are stationary or not, several tests can be applied to test for the existence of a unit root. The common tests for testing stationary are Augmented Dickey-Fuller (ADF), and Phillips Perron (PP). However, the null hypothesis of ADF and PP consider that the series are not stationary. As shown in tables (2.1-2) in appendix, results indicate that all variables are purely stationary at the first difference. Therefore, applying the ARDL technique is inevitable.

5.3 Cointegration Tests

To test the Cointegrating method between variables according to the ARDL methodology, using the Bounds-Test to see if there is a long-run and short-run relationship between variables. In addition, the Schwarz criterion SC is chosen for model testing.

5.3.1Auto Regressive Distributed Lag Results

Table (4) – ARDL Results

R-squared	Adjusted R-squared		F-statisticProb (F-statistic)
0.927120	**0.863956**	**14.67818**	**0.000003*** **

Note: *** indicate significance at 1% and ** indicate at 5%.
Source: Researchers Calculation

The results of the long run cointegration, in the previous table (4), indicate that the model is statistically significant. Which could be observed through the (R-squared) that reached (0.92712), hence it has been concluded that all model's independent variables are indeed affecting the dependent variable (unemployment) with approximately 92.7% of its fluctuations.

5.3.2Bound Test

According to the results of the table (5), F-Statistics (9.242563) is higher than the upper critical bound values of all significance levels.

Table (5) - The Bound testing results

Regrassors: K = 6	**F-Statistic**
LUNEM = f (SMCD, EGR,FDI, INFL, LDSE, PSCD), ARDL (1,2,0,2,2,0,0)	**9.242563*****

Critical values bound

Significance Level	Lower Critical Bounds (I0) **(LCB)**	Upper Critical Bounds (I1) **(UCB)**
10%	2.457	3.797
5%	2.970	4.499
1%	4.270	6.211

Note: * indicate significance at 1% and ** indicate at 5%.
Source: Researchers Calculation

F-Statistics (9.242563) is higher than the upper critical bound values of all significance levels. Therefore, null hypothesis is rejected while the alternative one is accepted. Which clarifies the existence of having a long-run equilibrium relationship between independent variable (unemployment) and the independent ones. Hence, considering what has been reached. Access is granted for seeking the long-run coefficients analysis. Estimated results for the relationships between the dependent and independent variables in Egypt through the period of (1990-2021) are shown in table (6).

5.3.3Long-Run Coefficients

According to the model results in Table (6), financial development depth proxy, **Private Sector Credit to GDP (PSCD)**, has a statistically significant negative relationship with the unemployment rate in the long run. The **PSCD** coefficient, on the other hand, is negative; its absolute value is (0.117523). This means that a 1% increase in credit granted to the private sector would result in

a 0.12% decrease in unemployment. Nonetheless, the low coefficient value implies an intriguing deduction, which may assume that the majority of private sector enterprises in Egypt have experienced market obstacles and production disruption, which explains the non-continuity of these enterprises in the long run.

Table (6) – Long-Run coefficients

Variable	Coefficient	Probability
SMCD (-1)	0.113618	0.0217**
EGR	-0.712882	0.0250**
FDI (-1)	-1.313823	0.0271**
INFL (-1)	0.026023	0.8433
LDSE	-0.108409	0.7356
PSCD	-0.117523	0.0228**

In the long run, the second-depth proxy, **Stock Market Capitalization to GDP(SMCD)**, has confirmed a statistically significant positive relationship with the unemployment rate. The SMCD coefficient, on the other hand, is positive, with an absolute value of (0.113618). This means that a 1% increase in the value of all listed shares on Egypt's stock exchanges as a share of GDP would result in a 0.113% increase in the unemployment rate. Even though the value of shares tends to have a negative correlation with unemployment rates since their values reflect the capital volume of those listed companies, employment rates rise as a result. Nonetheless, the explanation is interpreted as the fact that increased stock values are not justified primarily by their earnings (Faire Value) and, on a well-fundamental analysis basis, as they are by their (Market Value). In any case, increased market value corresponds to increased demand for stocks, which implies that a portion of domestic savings has been relocated into the capital market (stock trading) instead of the money market. This supports the idea that both markets have a crowding effect on each other. If a

1% increase in capitalization increases unemployment, it is because the 1% increase reduces the total credit that money markets could have obtained, raising the granted credit to the private sector to the total credit ratio. Nonetheless, as compared to the results of the first independent variable (Private Sector Credit to GDP), which has a negative impact on unemployment rates.

The third financial development proxy, **Lending-Deposit Spread (LDSE)**,has been confirmed to have a nonstatistical relationship with the unemployment rate in the long run because the probability value is greater than 5%. As a result, even though both are theocratically corelated, the financial development efficiency proxy (LDSE) appeared to be irrelative to unemployment rates. As for the Economic Growth (EGR) probability value (0.0250), which has been confirmed to have a statistically significant negative relationship with the unemployment rate in the long run, as supported by economic theory, this result, along with a coefficient value of (-0.712882), both indicate that a 1% growth rate would result in a 0.71% decrease in unemployment (inelastic employment). This could bring up concerns about approaching jobless growth and reliance on a capital-intensive structure. However, as capital-intensive industries become more prevalent, workers lose their jobs because they are no longer required. This results in structural unemployment. At least in the short term, while bearing in mind that a low long-run growth coefficient may be due to workers lacking the necessary job skills, Nonetheless, neither joblessness nor job growth could be stated categorically.

However, the **Inflation Rate (INFL)** has a non-statistical relationship with the unemployment rate in the long run, given that the probability value exceeds 5%. However, the findings contradict the economic theory of the Philips curve

(inverse relationship). **Foreign Direct Investment (FDI)**, on the other hand, is associated with a statistically significant negative relationship with the unemployment rate in the long run. The coefficient, on the other hand, is negative; its absolute value is (1.313823). This means that a 1% increase in the value of foreign investors' inward direct investment in Egypt would reduce unemployment by 1.3%. Nonetheless, such a significant coefficient value implies that Egypt is recognized as an ideal atmosphere for foreign investment, thereby benefiting the Egyptian labor market, potentially owing to the low prevailing average rate of wages.

5.3.4Error Correction Short-Run Model (ECM)

Table (7) – Short-Run coefficients

Variable	Coefficient	Probability
D(SMCD)	-0.019583	0.1013
D (SMCD (-1))	-0.045374	0.0011*
D(FDI)	0.049875	0.6659
D (FDI (-1))	0.600696	0.0001*
D(INFL)	0.069329	0.0019*
D (INFL (-1))	0.055355	0.0108**
C	10.06175	0.0000*
COINTEQ*	-0.570229	0.0000*

Note: * indicate significance at 1% and ** indicate at 5%.
Source: Researchers Calculation

According to the previous table, **Stock Market Capitalization to GDP** is found to have a statistically significant negative relationship with the unemployment rate in the short run. However, the coefficient is negative; its absolute value is (0.045374). Which indicates that an increase of 1% in in the value of all listed shares on Egypt's stock exchanges as a share of the GDP, would in turn decrease the unemployment rate by 0.04% in the short run.

As for the **Foreign direct investment,** at its first difference Although its probability indicates statistical significance in the short run at the level of 1%

significance, its coefficient value is positive in the short run. However, its absolute value indicates that a 1% increase in FDI would in turn increase the unemployment rate by 0.6%. In drawing things to a close, the inflation rate has shown statistical significance in the short run since its (prop. value = 0.0019), and its coefficient value is (0.069329), which indicates that a 1% percent increase in the rate of inflation would increase the rate of unemployment by 0.07%.

5.4 Diagnostic Tests

Residual normality test has been checked by applying the Jargue-Bera test. However, as Figure (3)shown in the appendix, result confirms that the null hypothesis (residuals are not normally distributed) is rejected. Hence, residuals are indeed normally distributed since the (Prob. (F statistics)) = (0.684022) is higher than 5%.Also, the cumulative sum (CUSUM) was applied to assess the stability for the coefficients in the regression model, the testsis used to test the constancy of the coefficients in a model and to detect small shifts and whether there are structural changes in the equation through implement forward and backward recursive regressions to obtain the test statistics. However, asprevious figure (4)reveals in the appendix, the CUSUM series sit between the lower and upper critical lines, which indicates model stability.

However, results of the serial correlationBreusch-Godfrey Serial Correlation (LM) Test confirm that thenull hypothesis is accepted. Which means that there is no serial correlation was found between residuals. Due to the fact, that the Prop (Prob. (Fstatistics)) =0.999972) is higher than the 5%. As shown in table (8).In the same context, homoscedasticity of residuals that is essential to make the estimated parameters reliable. The null hypothesis of the homoscedasticity ARCH test means that the size of the error term does not

differ across values of an independent variable. As shown in Table (9),the null hypothesis is accepted, since the (Prob. (F statistics)) = (0.310985)is greater than 5%.

6.Conclusion

This paper aimed at investigating empirically the financial development effect on unemployment in Egypt. However, proxying financial development was conducting by two common indicators beside introducing a new one.

The econometric results from ARDL show a long run cointegration between financial depth proxies and unemployment. There is a statistically significant negative effect on unemployment by the **Private Sector Credit to GDP**, in the long run, an increase of 1% in the granted credit to the private sector, would in turn decrease unemployment rate by 0.12%.Nevertheless, a curious result may deduct the fact that the majority of private sector enterprises in Egypt might have been facing market obstacles and production disruption, which in turn, explains the non-CONTINUITY of these enterprises in the long run. While the **Stock Market Capitalization to GDP (SMCD)** is founded to have a statistically significant positive relationship with the unemployment rate in the long run. However, Indication implies that an increase of 1% in the value of all listed shares on Egypt's stock exchanges as a share of the GDP, would in turn increase unemployment rate by 0.113%. Such result is analytically analyzed by the fact that the value of these listed companies do not reflect the true fair value of these companies' capitalization volume which by extension, rise unemployment rates. Moreover, the third financial development efficiency proxy **Lending-Deposit Spread(LDSE)**has appeared to be irrelative with the unemployment rates in both long and short run.

Finally, other control variables such as the **Economic Growth Rate**cointegration coefficient indicated statistically significant negative relationship with the unemployment rates. While **Inflation Rate**cointegration coefficient indicated a nonstatistical relationship with unemployment rates. However, **Foreign Direct Investment** results indicatedstatistically significant negative relationship with the unemployment ratesin the long run.

7. Policy Recommendations

On the one hand, the Egyptian Central Bank should implement extensive regulatory reforms that focus on strengthening both financial sectors capabilities, establishing a strong institutional framework, and promoting more sophisticated financial procedures with a high degree of diversification. On the other hand, more efforts must be achieved to ensure that the private sector gets access to more granted credit to accomplish both sustained higher growth rates and lower unemployment rates.

The Egyptian government must focus on encouraging primary financial markets for more new issues of securities that will guarantee more domestic savings mobilization to be allocated for the sake of achieving greater capital appreciation in the various investment sectors.

The Egyptian government should encourage labor-intensive industries rather than afford to invest in expensive capital, especially when most of the industrial inputs are imported and since the high exchange rate is what makes matters even worse. Therefore, to contain the high unemployment rate pressures, consideration must be taken with the methods of production that should be elastic with the scarcity of each production factor.

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Appendix

Table (2-1) - Stationarity Test - Augmented Dickey-Fuller (ADF) Unit Root test

At Level

		UNEM	**SMCD**	**PSCD**	**LDSE**	**INFL**	**FDI**	**EGR**
With Constant	t-Statistic	-3.0023	-1.6872	-1.7848	-2.8172	-3.0204	-3.2186	-3.3089
	Prob.	0.0469	0.4273	0.3802	0.0678	0.0440	0.0287	0.0231
		**	n0	n0	*	**	**	**
With Constant & Trend	t-Statistic	-3.9008	-1.5298	-1.2314	-2.9201	-3.0091	-3.1238	-4.1458
	Prob.	0.0256	0.7962	0.8854	0.1707	0.1459	0.1192	0.0154
		**	n0	n0	n0	n0	n0	**
Without Constant & Trend	t-Statistic	-0.4181	-0.9767	-0.1913	-1.6101	-1.7497	-1.9468	-1.2271
	Prob.	0.5243	0.2867	0.6086	0.1000	0.0761	0.0506	0.1968
		n0	n0	n0	*	*	*	n0

		d(UNEM)	**d(SMCD)**	**d(PSCD)**	**d(LDSE)**	**d(INFL)**	**d(FDI)**	**d(EGR)**
With Constant	t-Statistic	-4.3661	-5.1866	-3.1817	-3.3311	-6.8921	-3.5734	-8.1263
	Prob.	0.0017	0.0002	0.0315	0.0222	0.0000	0.0126	0.0000
		***	***	**	**	***	**	***
With Constant & Trend	t-Statistic	-4.3962	-5.2684	-3.6053	-3.2725	-6.7879	-3.5473	-8.1000
	Prob.	0.0079	0.0010	0.0469	0.0902	0.0000	0.0522	0.0000
		***	***	**	*	***	*	***
Without Constant & Trend	t-Statistic	-4.4313	-5.2819	-3.2390	-3.1965	-6.9519	-3.6367	-8.2803
	Prob.	0.0001	0.0000	0.0021	0.0024	0.0000	0.0007	0.0000
		***	***	***	***	***	***	***

At First Difference

Notes: (*) Significant at the 10%; (**) Significant at the 5%; (***) Significant at the 1%. and (no) Not Significant *MacKinnon (1996) one-sided p-values.

Source: Researchers Calculation

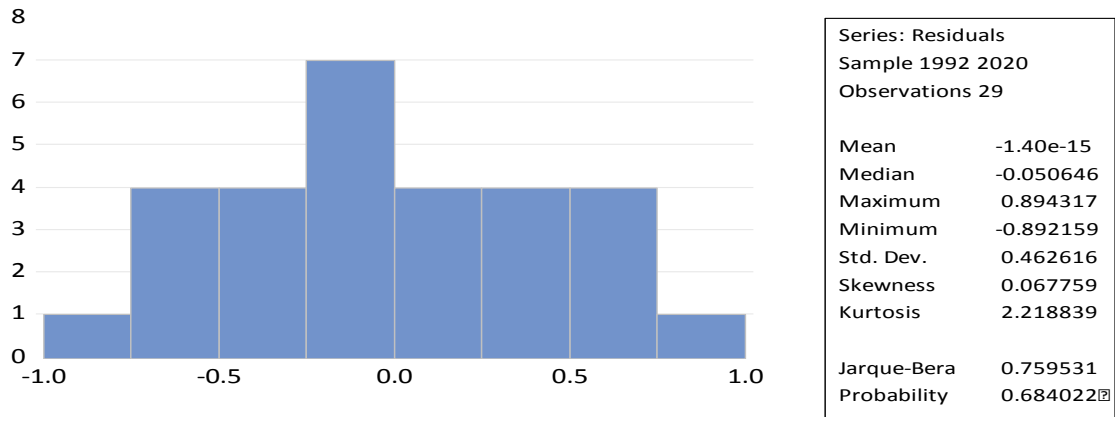

Figure (4) –Cumulative sum (CUSUM) stability diagnostic Test.

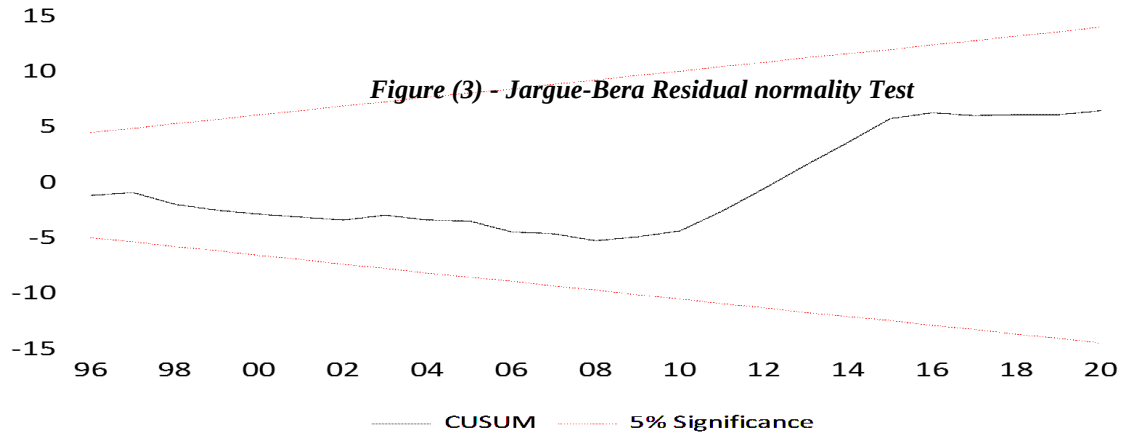

Figure (3) - Jargue-Bera Residual normality Test

Table (2-2) - Stationarity Test - Phillips Perron (PP) UNIT ROOT test

At Level

		UNEM	SMCD	PSCD	LDSE	INFL	FDI	EGR
With Constant	t-Statistic	-2.0666	-1.7350	-1.3719	-1.1738	-2.9496	-2.1596	-3.3089
	Prob.	**0.2587**	**0.4042**	**0.5825**	**0.6729**	**0.0512**	**0.2242**	**0.0231**
		n0	n0	n0	n0	*	n0	**
With Constant & Trend	t-Statistic	-1.7806	-1.5611	-1.3710	-1.7633	-2.8830	-2.1200	-3.2511
	Prob.	**0.6897**	**0.7844**	**0.8489**	**0.6979**	**0.1813**	**0.5151**	**0.0934**
		n0	n0	n0	n0	n0	n0	*
Without Constant &	t-Statistic	-0.4558	-0.9932	-0.3618	-1.2955	-1.6314	-1.5305	-1.1633

Trend								
	Prob.	**0.5093**	**0.2802**	**0.5458**	**0.1759**	**0.0961**	**0.1162**	**0.2178**
		n0	n0	n0	n0	*	n0	n0
At First Difference								
		d(UNEM)	**d(SMCD)**	**d(PSCD)**	**d(LDSE)**	**d(INFL)**	**d(FDI)**	**d(EGR)**
With Constant	t-Statistic	-4.3556	-5.1866	-3.2632	-3.3077	-7.5134	-3.3449	-7.7877
	Prob.	**0.0018**	**0.0002**	**0.0263**	**0.0235**	**0.0000**	**0.0215**	**0.0000**
		***	***	**	**	***	**	***
With Constant & Trend	t-Statistic	-4.3904	-5.2687	-3.5975	-3.2504	-7.6633	-3.3055	-7.7651
	Prob.	**0.0080**	**0.0010**	**0.0477**	**0.0941**	**0.0000**	**0.0847**	**0.0000**
		***	***	**	*	***	*	***
Without Constant & Trend	t-Statistic	-4.4216	-5.2819	-3.3183	-3.1865	-7.5909	-3.4234	-8.2803
	Prob.	**0.0001**	**0.0000**	**0.0017**	**0.0024**	**0.0000**	**0.0013**	**0.0000**
		***	***	***	***	***	***	***

Notes: (*) Significant at the 10%; (**) Significant at the 5%; (***) Significant at the 1and (no) Not Significant
*MacKinnon (1996) one-sided p-values.
Source: Researchers Calculation

Null hypothesis: No serial correlation at up to 2 lags

F-statistic	**0.717700**	**Prob. F(2,13)**	**0.5062**
Obs*R-squared	**2.883648**	**Prob. Chi-Square (2)**	**0.2365**

Test Equation:
Dependent Variable: RESID
Method: ARDL
Date: 09/26/23
Time: 23:41
Sample (adjusted): 1992 2020
Included observations: 29 after adjustments
Presample and interior missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
UNEM (-1)	0.021999	0.137816	0.159628	0.8756
SMCD	0.013061	0.021272	0.613979	0.5498
SMCD (-1)	-0.005078	0.016252	-0.312459	0.7596
SMCD (-2)	-0.007088	0.020144	-0.351843	0.7306
EGR	-0.038200	0.154457	-0.247316	0.8085
FDI	-0.084276	0.219684	-0.383625	0.7075
FDI (-1)	0.062402	0.185650	0.336126	0.7421
FDI (-2)	0.040450	0.210520	0.192145	0.8506
INFL	0.014171	0.038907	0.364222	0.7215
INFL (-1)	0.005384	0.039664	0.135747	0.8941
INFL (-2)	0.007442	0.041039	0.181331	0.8589
LDSE	-0.047976	0.190360	-0.252030	0.8050
PSCD	0.005902	0.032649	0.180769	0.8593
C	-0.355022	2.588745	-0.137140	0.8930
RESID (-1)	-0.085356	0.300990	-0.283585	0.7812
RESID (-2)	-0.412974	0.353096	-1.169577	0.2632

R-squared	0.099436	**Mean dependent var**	-1.40E-15
Adjusted R-squared	-0.939676	**S.D. dependent var**	0.462616
S.E. of regression	0.644296	**Akaike info criterion**	2.259785
Sum squared resid	5.396525	**Schwarz criterion**	3.014155
Log likelihood	-16.76688	**Hannan-Quinn criter.**	2.496044

F-statistic	0.095693	**Durbin-Watson stat**	2.039694
Prob(F-statistic)	**0.999972**		

Table (9) – Heteroskedasticity (ARCH) Test

F-statistic	**1.067684**	**Prob. F(1,26)**	**0.3110**
Obs*R-squared	**1.104460**	**Prob. Chi-Square (1)**	**0.2933**

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 09/26/23
Time: 23:42
Sample (adjusted): 1993 2020
Included observations: 28 after adjustments
HAC standard errors & covariance (Bartlett kernel, Newey-West fixed bandwidth = 3.0000)

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	**0.242558**	**0.071422**	**3.396110**	**0.0022**
RESID^2(-1)	**-0.197544**	**0.153718**	**-1.285107**	**0.2101**

R-squared	0.039445	**Mean dependent var**	0.201081
Adjusted R-squared	0.002501	**S.D. dependent var**	0.234455
S.E. of regression	0.234162	**Akaike info criterion**	0.003138
Sum squared resid	1.425623	**Schwarz criterion**	0.098296
Log likelihood	1.956061	**Hannan-Quinn criter.**	0.032229
F-statistic	1.067684	**Durbin-Watson stat**	2.012819
Prob(F-statistic)	**0.310985**		

الملخص

منذ حدوث الأزمة المالية العالمية (2007-2009) وقد قامت اِدعاءات بثُبت علي وجود دلائل تشيراِلي أن التوسع في التحرير المالي وزيادة معدلات التمويل كان لها دور سلبي علي معدلات النمو. تتناول هذه الدراسة تأثيير تنمية القطاع المالي علي سوق العمل وتحليل مدي أثر تطور أداء أسواق الوساطة المالية علي معدلات البطالة. ولذلك فقد ركزت الدراسة التجريبية علي أختبار تأثير التنمية المالية علي معدلات البطالة في مصر في الفترة (1990-2021). وبأستخدام منهجية الأنحدار الذاتي ذو الفجوات المبطأة واِختبار الحدود(ARDL and Bound-Test) والتكامل المشترك قصير الأجل (ECM) لأستبيان نتائج التحليل طويل وقصير الأجل. بينما يعد تناول هذه الدراسة التجريبة بمثابة أول دراسة تتناول تحليل العلاقة بين التنمية المالية والبطالة في شكل السلاسل الزمنية، هذا وقت انتهت الدراسة بأن لحجم الأئتمان الممنوح للقطاع الخاص تأثير سلبي علي معدلات البطالة، في حيث كان لحجم رأس المال السوقي للشركات المدرجة بالبورصة تأثير اِيجابيعلي معدلات البطالة، واِن لم يكن لهامش سعر الفائدة أي دلالة اِحصائية مع معدلات البطالة. وأخيراتوصي الدراسة برفع مستوي التطور المالي ومايرتبط بها من تداعيات تهدف اِلي تخفيف من حدة معدلات البطالة في مصر خلال هذه الفترة.

الكلمات المفتاحية: التنمية المالية؛ البطالة؛ النمو الاقتصادي ؛ إدارة المحتوى في المؤسسة.