

## The Impact of Financial Liberalization on Household Welfare in Egypt: An Econometric Analysis of Short-Run and Long-Run Dynamics

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### Abstract:

This study aimed to examine the impact of financial liberalization, in both its domestic dimension (credit to the private sector) and external dimension (external assets and liabilities), on welfare in Egypt, measured by average household consumption per capita, over the period (1990–2023), using the ARDL co-integration approach with bounds testing, along with standard unit root tests for stationarity. The results confirmed the existence of a long-run co-integrating relationship among the variables, with a significant negative effect of financial liberalization on welfare in both the long run and the short run.

**Keywords:** Internal Financial Liberalization, External Financial liberalization, householdwelfare.

**Jel classification :** C32 ; G1, G28, G21

### I. Introduction:

Recent developments have radically altered global economic trends, characterized by the liberalization of financial data and the easing of restrictions previously imposed on financial activity. Shaw and McKinnon commonly defined financial liberalization as the optimal solution to overcome financial repression, and the only effective means to develop financial intermediation, to initiate capital accumulation, and to enhance economic growth in developing countries (Iman, 2000). This liberalization encompasses reforms, According to Kaminsky and Schmukler, financial liberalization consists of liberalizing the capital account of the foreign sector, liberalizing the domestic financial sector, and viewing the stock market (capital market) separately from the domestic financial sector . (Arestis & Carner, 2004). In the context of local liberalization, it aimed at streamlining interest rate management, increasing access to financial instruments; however, External financial liberalization refers to the removal of restrictions on transactions in the capital account and the financial accounts of the balance of payments, as well as the elimination of restrictions on foreign exchange transactions and other controls related to these transactions. (Mediani & Talhaoui, 2015). This approach is straightforward because, firstly, it involves the liberalization of financial freedom, which entails removing restrictions on domestic financial systems and markets, and secondly, it seeks to facilitate the free flow of capital across borders and within the framework of international financial markets.

Welfare has long been a focus of attention for both researchers and policymakers, considered the ultimate goal of any development effort and the true benchmark against which the effectiveness of economic policies is tested. In this context, welfare can be interpreted in one way in a person's everyday life perspective, and another when looking at it at the societal macro level . welfare has also seemingly a different connotation depending on whether one understands it from a mainly economic

or mainly sociological perspective (Greve, 2008). Economic theories vary in their interpretation of how financial factors influence well-being. While some view the liberalization of financial details as a means of allocating resources more effectively, thereby increasing investment and diversification, which positively impacts economic growth and living standards, others argue that such liberalization could exacerbate financial volatility, lead to banking crises, and widen inequality gaps, particularly in countries with robust institutional frameworks and effective regulatory systems.

Despite the numerous studies addressing this topic, the results are inconclusive and contradictory. Some studies assert a significant increase in the need for consumption, while others indicate limited or even detrimental effects, especially in emerging economies that may face rapid changes in consumption and employment. Furthermore, most studies have focused on external liberalization in isolation, failing to fully grasp the interplay of its various components and their impact on welfare.

This leads to the central question posed by this study:

Is there a statistically significant relationship between liberalization and its internal (court-based) coordination, and the level of welfare in the Egyptian economy?

This leads to the following questions:

- What was the nature and level of financial liberalization in Egyptian during the period under study?
- How can welfare be measured, and are there differences in the impact of internal versus external liberalization?
- Is there a short-run and long-run relationship between external and internal financial liberalization and the welfare?

## II. Review of literature:

There are some studies that addressed the relationship between agriculture and economic growth, which focused on the agricultural sector in terms of its economic value, or as a strategic option on which the economic development process is based, including:

The study by **Thang T.V o, DinhX.Nguyen ( 2021)** which addressed the topic of the Impact of Trade Liberalization on Household Welfare: An Analysis Using Household Exposure-to-Trade Indices, This study uses Vietnam Household Living Standard Survey data (2002–2016) to examine how trade liberalization affects household welfare through income, expenditure, and poverty vulnerability, and by constructing household-level exposure-to-trade indices, it addresses endogeneity while capturing both national tariff changes and each household's capacity to respond to new opportunities; the results show that trade liberalization raises household income and expenditure mainly through export-driven labor demand, whereas tariff reductions on exported goods do not yield equivalent welfare gains, and crucially, these positive effects weaken after the 2008 global crisis, with rural households facing greater vulnerability and poor households gaining significantly fewer benefits in the post-crisis period.

In the same context, The study by **Henry Okodua ( 2014 )** addressed the Household Welfare Impact of Trade Liberalization in Nigeria: A Computable General Equilibrium Model, This study uses a static Computable General Equilibrium (CGE) model based on a 2006 Social Accounting Matrix for Nigeria to simulate the household welfare effects of two trade liberalization scenarios: a complete removal of all import tariffs (SIM1) and a 24% reduction in import tariffs (SIM2). The results show that both scenarios lead to overall welfare losses for Nigerian households in the short run. The agricultural sector is particularly harmed, as liberalization shifts consumption from domestic production to cheaper imports, reducing domestic output, value added, and labor demand in

agriculture. Consequently, rural households experience larger declines in income and consumption compared to urban households. Under complete tariff elimination, rural household income falls by 6.92% and urban by 4.57%; under the 24% reduction, rural income drops by 1.40% and urban by 0.92%. The study concludes that trade liberalization in Nigeria is not uniformly beneficial and recommends a sectoral approach to avoid undermining household welfare.

The study by **Jürgen von Hagen and Haiping Zhang (2006)** examined an A Welfare Analysis of Capital Account Liberalization, This study develops a dynamic small-open-economy model with Holmstrom–Tirole-type financial frictions, where mutual funds intermediate between domestic households, entrepreneurs, and foreign lenders, and capital controls are modeled as an upper limit on foreign deposits. The model shows that liberalizing capital controls lowers domestic loan rates, reallocates land from less productive households to more productive entrepreneurs, and improves production efficiency. However, welfare gains are uneven—entrepreneurs benefit while households may lose in the long run, and public transfers cannot fully compensate them without undermining efficiency. Greater labor market flexibility amplifies efficiency gains. Temporarily, households gain during transition, but sudden "big bang" liberalization causes asset price overshooting and volatility, while gradualism ensures a smoother adjustment. The findings recommend gradual liberalization coordinated with labor market reforms.

A study **Seshan, Ganesh( 2005)**examined The Impact of Trade Liberalization on Household Welfare in Vietnam,uses a welfare measurement framework that links price changes from trade reforms to changes in household welfare, income distribution, and poverty through theoretically consistent producer and consumer welfare measures. This methodology, grounded in applied welfare economics, can be applied to various labor market conditions.The analysis focuses on Vietnam's rice sector and fertilizer market during 1993–1998, when the national poverty rate fell from 59% to 37%.When isolating the effects of these reforms, the results show that liberalization did not significantly improve overall household welfare or reduce poverty at the national level.However, the reforms explain about half of the poverty reduction among farm households, generating gains for rural households across the distribution without worsening inequality.Notably, rural households—particularly the poor—gained at the expense of urban households, highlighting a clear rural-urban welfare trade-off.

### III. Materials and methods :

In this study, we will examine the impact of internal and external fiscal liberalization on the Welfare during the period from 1990 to 2023, using data from the World Bank

#### 1 - Model Description

Based on previous studies, and some studies as well as , “ Special Economic Zones and Household Welfare in Ghana”. ,(Ackah, Osei, & Owusu, 2025); “Co-integration with Regime Shift between Financial Development and Poverty Reduction in Algeria for the Period 1970-2017”,(Ayad, 2019); “Impact of financial liberalization on Algeria's balance of payments (1990-2021)” (Bourna, 2023), linear model consisting of one dependent variable and two independent variables was adopted, as detailed below:

$$wel = \alpha_0 + \alpha_1 Ext + \alpha_2 Int + \mu_t$$

where:

**Wel:**welfare rate represented by Household and NPISHS Final Consumption Expenditure per capita.

**Ext:** External financial liberalization measured by calculating the value of (External Liabilities +

External Assets / GDP) of each year .

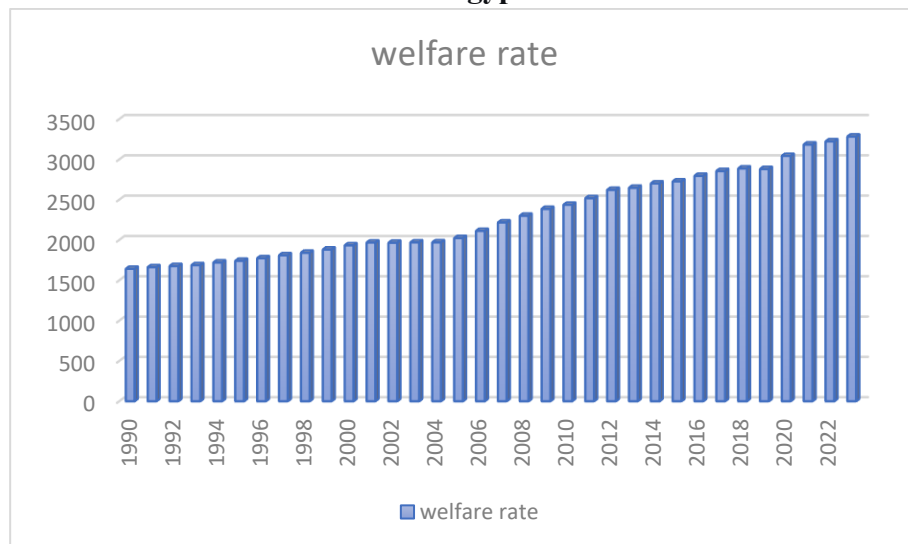
**Int:** Internal financial liberalization presented by domestic credit to private sector as a percentage of GDP.

## 2. The Evolution of the Study Variables in Egypt during the Period 1990–2024

### 2.1.The Evolution of Social Welfare in Egypt:

Household consumption represents the cornerstone of the Egyptian economy, contributing approximately 80% of gross domestic product. This expenditure has demonstrated substantial growth in recent years, as real household consumption surged by 68% in 2026 relative to pre-pandemic benchmarks. Per capita final consumption expenditure by households, denominated in constant US dollars, has exhibited a consistent upward trajectory, rising from \$3,283 in 2023 to \$3,747 in 2025. Future prospects remain positive, with expectations of sustained improvement underpinned by moderating inflation and enhanced purchasing power, and a further increase of 23% over pre-pandemic levels is anticipated .The evolution of the welfare indicator is shown in the following figure:

**Figure (1):The Evolution of Social Welfare in Egypt**



**Source:** Prepared by the researchers using Excel software.

Data published by the World Bank indicate that the value of the indicator, expressed in constant US dollars (base year 2015), has more than doubled over the period in question. A marked increase is observed, with the indicator rising from approximately \$1,709 per capita in 1990 to \$3,281 in 2023, the highest level ever attained.

When assessed in purchasing power parity terms, the indicator's value has similarly doubled, climbing from around 6,248 international dollars in 1990 to 13,300 international dollars in 2024, corresponding to a compound annual growth rate.

### 2.2.The Evolution of financial liberalization:

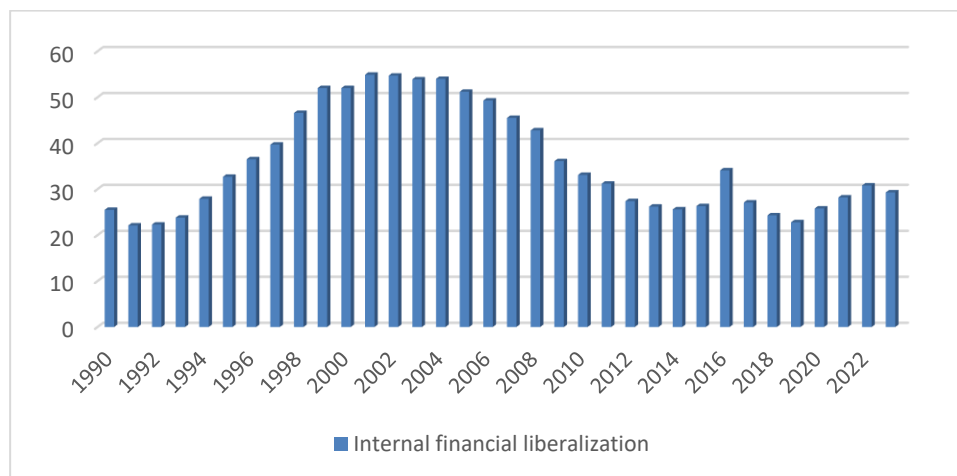
The financial liberalization program in Egypt was introduced in January 1991. The measures for financial liberalization included the liberalization of interest rates; reforming banking legislation and the stock market; strengthening the control of the Central Bank of Egypt; regulating the treasury bill market; and adopting a unified and free exchange rate for foreign currencies.(Kevser, 2007)The true beginning of reforms in the financial sector may have been since 1974. These reforms included the adoption of a series of laws.

\* Law 43/1974, which reduced Egyptian ownership to 51%, allowing foreigners to own the

remaining 49%; Law 120/1975, which granted the Central Bank of Egypt supervisory and regulatory authority over the banking sector, also making it an independent legal authority; Law 43/1974, which liberalized the foreign exchange market and some imported goods, providing incentives/subsidies for local and foreign private companies.

\* Law 32/1977, which offered more tax exemptions and benefits for private companies, leading foreign and joint banks to establish themselves to benefit from these incentives and reforms)Kapadia ‘ (2011The aforementioned procedures fall under the notion of domestic financial liberalization. The development of one of its indicators, specifically credit extended to the private sector, is illustrated in the figure below:

**Figure (2):The Evolution of Internal financial liberalization**



**Source:** Prepared by the researchers using Excel software.

As can be seen from the figure above, the level of domestic financial liberalization—measured by private sector loans as a share of GNP—has experienced some volatility. It declined during 1990–1992, then rose markedly between 1993 and 2004. The substantial rise in the indicator of credit extended to the private sector between the early 1990s and 2004 is attributable to a comprehensive structural adjustment program undertaken by Egypt, with support from the International Monetary Fund and the World Bank, which brought about a radical transformation of the economic and financial environment, before dropping again because of Egyptian banks increasingly shifted away from lending to the private sector toward financing the state—a phenomenon known as “crowding out” and the beginning of financing the budget deficit. The government resorted heavily to local banks to finance the general budget deficit through the purchase of treasury bills and bonds. This provided banks with investment opportunities offering higher returns and lower risks compared to lending to the private sector, thereby displacing the private sector from bank financing in favor of the government. World Bank data indicated that banks were heavily invested in treasury bills, holding approximately 91% of outstanding bills until December 2008.

### 2.3.External financial liberalization:

In order to present and simplify the trend of external financial liberalization in Egypt, it is necessary to provide a brief overview of the key measures for liberalizing the Egyptian financial market and capital market as follows:

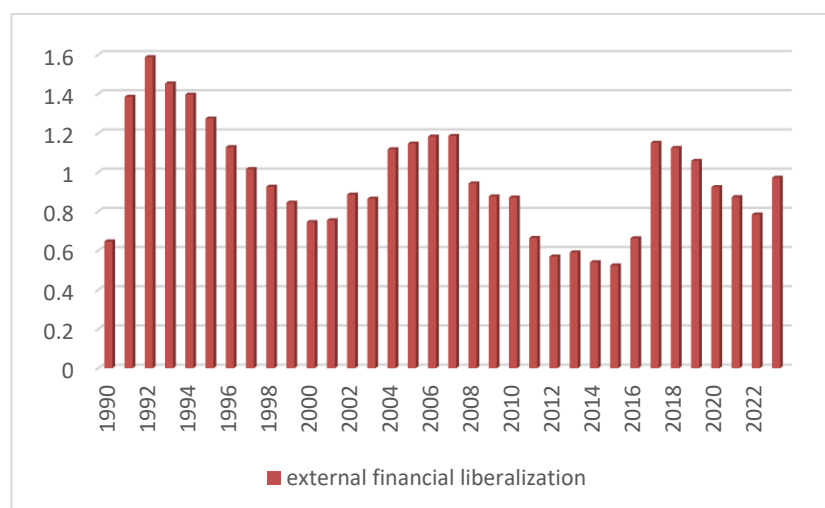
The financial market in Egypt: The development of the stock market in Egypt has largely followed the same path as the banking sector. The activity of the capital market in Egypt began in 1988, and at

its peak, the Egyptian stock exchange ranked fifth among the world's most active exchanges. (Bolbol, 2005). However, after the nationalization policy in the 1960s, the stock exchange went through a period of stagnation and recession. As a result, trading volume collapsed, and only about 30 registered companies remained compared to 925 companies in the late 1950s. The necessary regulations regarding registration and the organization of stock trading were not available in the market, so Law No. 161 of 1957 was issued to regulate stock exchange operations. The "open door" policy was adopted in 1974 with the aim of changing matters, as the reforms aimed at mobilizing local investment went beyond the banking system to include securities. From this perspective, the General Authority for the Capital Market was established in the mid-seventies to regulate and manage the stock exchange, following the issuance of Presidential Decree No. 520 of 1979. However, the activity of the stock exchange remained stagnant during the period from 1970 to 1990 due to the interaction of several factors, including the bias in the tax law against investment in securities, the absence of a specific law governing securities transactions, insufficient financial disclosure, and weak laws protecting small investors. In addition, unfavorable economic conditions generally kept the environment in a position that did not allow for the development of the capital market. (Bolbol, 2005)

As part of the economic reform and adjustment program in Egypt, greater attention has been given to the potential role of the stock market, which is considered an important tool for mobilizing local and foreign resources. In line with the financial reform program, Law No. 95/1992 was issued to reorganize the primary and secondary capital markets to encourage private savings investment. The law included the following measures: tax exemptions on securities; liberalization of interest rates on bonds; the establishment of mutual funds to attract small investors; and the regulation of companies dealing in securities alongside brokerage operations. (Kevser, Financial Structure of Egypt, 1994)

The trajectory of external financial liberalization, as proxied by the ratio of external assets and liabilities to Gross National Product (GNP), may be observed in the figure below :

**Figure (3):The Evolution of External financial liberalization**



**Source:** Prepared by the researchers using Excel software.

As can be seen from the figure above, the external financial liberalization indicator has experienced considerable volatility. It grew rapidly between 1990 and 1992, then declined from 1992 through 2000. The indicator subsequently picked up again and continued to rise until 2008 (which coincides

with the financial crisis), after which it kept falling until 2014. It then increased once more until 2018, before tapering off again through to 2022

### 3- Studying the Stationarity of Time Series:

To test the stationarity of the series under study, we will rely on the modified Dickey-Fuller test (ADF), which tests the stationarity of the time series using the null hypothesis, which states that there is a unit root (the time series is unstable), versus the alternative hypothesis, which states that there is no unit root (the time series is stationary). The results were as follows:

**Table (1): Results of the modified Dickey-Fuller stationarity test.**

| At Level                 |              |               |               |               |
|--------------------------|--------------|---------------|---------------|---------------|
|                          |              | WEL           | INT           | EXT           |
| With Constant            | t-Statistic  | 2.4793        | -1.0251       | -3.0996       |
|                          | <b>Prob.</b> | <b>1.0000</b> | <b>0.7326</b> | <b>0.0367</b> |
|                          |              | n0            | n0            | **            |
| With Constant & Trend    | t-Statistic  | -1.8270       | -2.2880       | -2.7536       |
|                          | <b>Prob.</b> | <b>0.6679</b> | <b>0.4281</b> | <b>0.2236</b> |
|                          |              | n0            | n0            | n0            |
| Without Constant & Trend | t-Statistic  | 8.1568        | -0.1328       | -0.3056       |
|                          | <b>Prob.</b> | <b>1.0000</b> | <b>0.6304</b> | <b>0.5679</b> |
|                          |              | n0            | n0            | n0            |
| At First Difference      |              |               |               |               |
|                          |              | d(WEL)        | d(INT)        | d(EXT)        |
| With Constant            | t-Statistic  | -3.7116       | -3.5685       | -5.8292       |
|                          | <b>Prob.</b> | <b>0.0087</b> | <b>0.0123</b> | <b>0.0000</b> |
|                          |              | ***           | **            | ***           |
| With Constant & Trend    | t-Statistic  | -4.2732       | -3.8645       | -5.6433       |
|                          | <b>Prob.</b> | <b>0.0100</b> | <b>0.0257</b> | <b>0.0003</b> |
|                          |              | **            | **            | ***           |
| Without Constant & Trend | t-Statistic  | -1.9367       | -3.6146       | -5.9084       |
|                          | <b>Prob.</b> | <b>0.0516</b> | <b>0.0007</b> | <b>0.0000</b> |
|                          |              | *             | ***           | ***           |

**Source:** Prepared by the researchers using Eviews.10 software.

The results show that the poverty rate series (WEL) and the internal financial liberalization series (INT) are non-stationary because the probability values for the ADF test exceed the 5% significance level. Therefore, we cannot reject the null hypothesis, which states that there is a unit root in both series. However, after taking the first difference, we find that they are stationary, and thus they are of the first order, I(1).

For the External financial liberalization series (EXT), the results in the table above show that the series is stationary at the level, thus rejecting the null hypothesis that posits the existence of a unit root. Therefore, the series is stationary of order I(0).

Therefore, there is a combination of I(0) and I(1). Furthermore, there is no stationary series at the second difference, which means that the Autoregressive Lag Delay (ARDL) model must be adopted.

The ARDL method was introduced and developed by Pesaran in 1997 and redeveloped by researchers (Smith) and (Shin) in 2001 to become the ARDL bound test model (Pesaran, Shin, & Smith, 2001), as the latter is distinguished from other co-integration tests such as Engle and Granger, Johansen and Juselius (Elhassan & Braima, 2020) can be used when the variables are integrated of degree one  $I(1)$  or zero  $I(0)$  or a combination of the two. In addition, it gives unbiased estimates, is suitable for series ranging from 30 observations and above, and also allows inserting of dummy variables to study structural changes.

This type of model is characterized by: (NKORO & Ukop, 2016)

- The ARDL approach does not impose the restrictive assumption that all variables must be integrated of the same order, as it accommodates variables that are  $I(0)$ ,  $I(1)$ , or mutually cointegrated.
- Unlike alternative cointegration methods, the ARDL technique performs exceptionally well in small samples, producing robust estimates even when the number of observations is limited.
- One of the key advantages of this approach is its capacity to provide simultaneous estimates of both the short-run dynamics and the long-run equilibrium relationship among the variables.

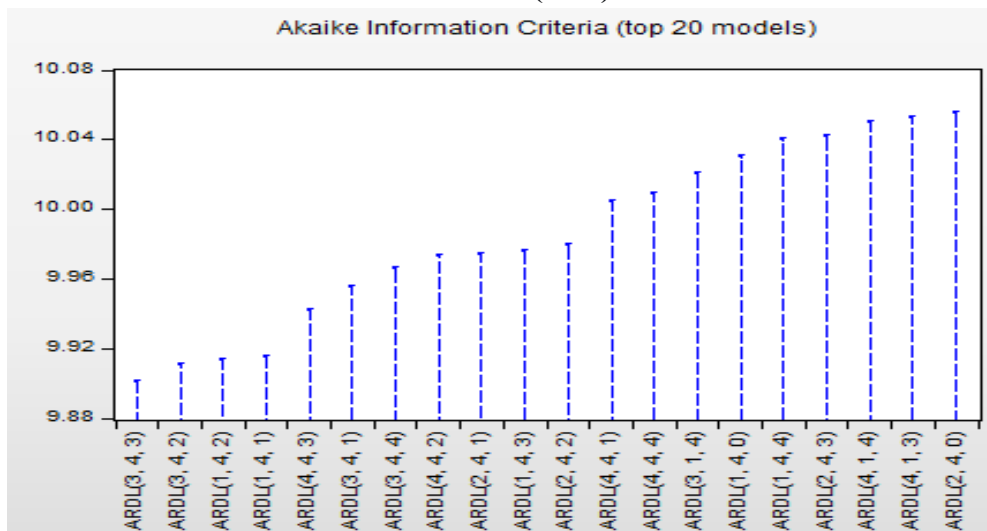
#### 4. Estimation of the ARDL Model

The estimation of the Autoregressive Distributed Lag (ARDL) model proceeds through several sequential stages, as outlined below:

##### 4.1. Selection of the Optimal Lag Order

The appropriate lag length for each variable included in the model is determined using standard model selection criteria, among which the Akaike Information Criterion (AIC) is commonly employed. The optimal lag order (p) is chosen based on the minimization of the AIC value. The resulting lag selection outcomes are presented as follows:

**Figure (4): Optimal Lag Length Selection Results According to the Akaike Information Criterion (AIC)**



**Source:** Computed by the authors using EViews 10.

From the figure above, we can see that the best slowdown values are: 3 for the dependent variable (WEL), 4 for the variable (INT), and 3 for the variable (EXT), thus making the model optimal. ARDL(3.4.3).

##### 4.2. Cointegration Test :

The presence of a long-run equilibrium relationship among the model's variables is examined using the ARDL bounds testing approach. This procedure involves comparing the calculated F-statistic with

the lower and upper critical bound values tabulated by Pesaran et al. (2001). Specifically, if the computed F-statistic is less than the lower critical bound, the null hypothesis of no cointegration cannot be rejected, implying the absence of a long-run relationship. However, if the computed F-statistic exceeds the upper critical bound, the null hypothesis is rejected, confirming the existence of a stable long-run relationship among the variables. The empirical results of this test are reported in the table below:

**Table 3: Results of the Bounds Cointegration Test**

| <b>F-Bounds Test</b>         |          |        |                               |       |
|------------------------------|----------|--------|-------------------------------|-------|
| <b>Test Statistic</b>        | Value    | Signif | I(0)                          | I(1)  |
|                              |          |        | <b>Asymptotic:<br/>n=1000</b> |       |
| <b>F-statistic</b>           | 7.559729 | 10%    | 2.63                          | 3.35  |
| <b>K</b>                     | 2        | 5%     | 3.1                           | 3.87  |
|                              |          | 2.5%   | 3.55                          | 4.38  |
|                              |          | 1%     | 4.13                          | 5     |
|                              |          |        | <b>FiniteSample:<br/>n=30</b> |       |
| <b>ActualSample<br/>Size</b> | 30       |        |                               |       |
|                              |          | %10    | 2.915                         | 3.695 |
|                              |          | 5%     | 3.538                         | 4.428 |
|                              |          | 1%     | 5.155                         | 6.265 |

**Source:** Computed by the authors using EViews 10.

The empirical results indicate that the calculated F-statistic ( $F = 7.55$ ) exceeds the upper critical bound value ( $BU = 4.428$ ) at the 5% level of significance. Accordingly, the null hypothesis of no cointegration is rejected in favor of the alternative hypothesis, confirming the existence of a long-run cointegrating (equilibrium) relationship among the independent variables (EXT and INT) and the dependent variable (WEL).

#### 4.3. Long-Run Relationship Estimation:

Having established the presence of a long-run cointegrating relationship among the dependent variable and the explanatory variables, we estimated the long-run coefficients. The results of this estimation are reported in the following table:

**Table 4: Estimated Long-Run Coefficients**

| <b>Variable</b>                                             | <b>Coefficient</b> | <b>Std. Error</b> | <b>t-Statistic</b> | <b>Prob.</b> |
|-------------------------------------------------------------|--------------------|-------------------|--------------------|--------------|
| INT                                                         | -23.48041          | 7.570829          | -3.101432          | 0.0065       |
| EXT                                                         | -785.6027          | 333.0959          | -2.358488          | 0.0306       |
| C                                                           | 3135.054           | 490.8811          | 6.386586           | 0.0000       |
| <b>EC = POV - (-23.4804*INT -785.6027*EXT + 3135.0540 )</b> |                    |                   |                    |              |

**Source:** Computed by the authors using EViews 10.

From the estimated long-run results, the following observations can be made:

- The long-run coefficient of domestic financial liberalization is statistically significant at the 5% level. Specifically, a one-unit increase in domestic financial liberalization is associated with a decrease in the welfare rate by 23.48 units. This outcome is in line with the findings reported by J. Kähkönen in his study : “ Liberalization Policies and Welfare in a Financially Repressed Economies “ , confirming that partial financial liberalization—particularly raising deposit interest rates—can lead to welfare losses in the short run when other markets remain repressed ; Jere R. Behrman, Nancy Birdsall, Miguel Székely in their study ( 2001 ): "Poverty, Inequality, and Trade and Financial Liberalization in Latin America"
- Depending on 93 household surveys across 17 Latin American countries (1977-2000), this study found that financial liberalization significantly increased inequality and poverty in the long run, while trade liberalization had no significant effect
- With respect to the external financial liberalization variable, its coefficient is also statistically significant and exhibits a negative impact on the welfare rate. More precisely, a one-unit increase in external financial liberalization leads to a decline in the welfare rate by 785.60 units, which corroborates the results of (Furceri & Loungani, 2018), depending on data of 149 countries, during the period 1970-2010 , they found that Capital account liberalization episodes are associated with a persistent increase in the Gini coefficient, the standard measure of income inequality. The effect is a rise of about 0.8% in the short term(1 year) and 1.4% in the long term (5 years) after a reform; same results was conducted by (Xiang & Dan, 2020), they foundthat capital account liberalization in developing economies results, over the long term, in a reduction of the income share accruing to the bottom 50% of the population, while simultaneously increasing the income share of the top 10%.

#### 4.4. Estimation of the ECM (Error Correction Model):

The validity of the error correction model is contingent upon two essential conditions: first, the coefficient of the error correction term (CointEq(-1)) must be negative, indicating convergence toward long-run equilibrium; second, it must be statistically significant, confirming the existence of a long-run causal relationship. The obtained results are reported as follows:

**Table (5): Short-Run Estimation Results (ECM)**

| ECM Regression                           |             |                    |             |        |
|------------------------------------------|-------------|--------------------|-------------|--------|
| Case 2: Restricted Constant and No Trend |             |                    |             |        |
| Variable                                 | Coefficient | Std. Error         | t-Statistic | Prob   |
| D(WEL(-1))                               | -0.082548   | 0.166793           | -0.494915   | 0.6270 |
| D(WEL(-2))                               | -0.408125   | 0.163579           | -2.494977   | 0.0232 |
| D(INT)                                   | -0.456008   | 1.820213           | -0.250525   | 0.8052 |
| D(INT(-1))                               | 0.805614    | 1.998374           | 0.403135    | 0.6919 |
| D(INT(-2))                               | -0.476357   | 1.924030           | -0.247583   | 0.8074 |
| D(INT(-3))                               | -5.533286   | 1.713947           | -3.228388   | 0.0049 |
| D(EXT)                                   | -61.21765   | 42.82857           | -1.429365   | 0.1710 |
| D(EXT(-1))                               | -93.14896   | 50.17464           | -1.856495   | 0.0808 |
| D(EXT(-2))                               | -69.86729   | 47.49311           | -1.471104   | 0.1595 |
| CointEq(-1)*                             | -0.091738   | 0.015381           | 5.964494    | 0.0000 |
| R-squared                                | 0.681409    | Meandependent var  | 53.18824    |        |
| Adjusted R-squared                       | 0.538043    | S.D. dependent var | 39.92402    |        |

|                    |           |                         |          |  |
|--------------------|-----------|-------------------------|----------|--|
| S.E. of regression | 27.13532  | Akaike info criterion   | 9.700751 |  |
| Sumsquaredresid    | 14726.51  | Schwarz criterion       | 10.16782 |  |
| Log likelihood     | -135.5113 | Hannan-Quinn<br>criter. | 9.850169 |  |
| Durbin-Watson stat | 2.040628  | Meandependent var       | 53.18824 |  |

**Source:** Computed by the authors using EViews 10.

Based on the estimation results, the following findings are derived:

-The coefficient of the error correction term (CointEq(-1)) is -0.091, which is negative as required and statistically significant. This confirms the validity of the error correction model and provides evidence of a long-run cointegrating relationship. The speed of adjustment toward equilibrium is approximately 9.1%, indicating that short-run deviations are corrected at this rate.

-With respect to the short-run coefficients, only certain variables are statistically significant at the 5% level, namely [D(WEL (-2)) and D(Int(-3))], while the remaining variables are not statistically significant.

-The adjusted R-squared value is 0.5380, implying that approximately 53.80% of the variation in the poverty rate (WEL) is explained by the independent variables (Int and Ext), whereas the remaining 46.2% is attributable to other factors not incorporated in the model.

#### 4.5. Diagnostic Testing of the Model:

In order to assess the adequacy and reliability of the estimated model, as well as to confirm the absence of any standard econometric issues, a series of diagnostic tests must be conducted, including the following:

##### 4.5.1. Normality Test:

To verify whether the residuals are normally distributed, the Jarque-Bera (JB) test is employed. The null hypothesis of this test posits that the residuals are normally distributed. The results of this test are presented in the following table :

**Table (6): Jarque-Bera Normality Test Results**

| Test        | Statistic | p-value | Decision     |
|-------------|-----------|---------|--------------|
| Jarque-Bera | 1.191     | 0.5512  | Accept $H_0$ |

**Source:** Computed by the authors using EViews 10

Thus, the p-value (prob. = 0.5512) exceeds the 5% significance level, we fail to reject the null hypothesis. This indicates that the residuals are normally distributed.

##### 4.5.2. Testing the Stability of Error Variance (Homoscedasticity):

Several diagnostic tests are available for detecting heteroskedasticity in the estimated model. In this study, we employ the ARCH (Autoregressive Conditional Heteroskedasticity) test. The null hypothesis posits that the error variance is homoscedastic (constant), while the alternative hypothesis suggests the presence of heteroskedasticity (non-constant variance). The results of this test are reported in the table below:

**Table (7): Autoregressive Conditional Heteroskedasticity (ARCH) Test Results**

|               |          |                      |        |
|---------------|----------|----------------------|--------|
| F-statistic   | 0.738877 | Prob. F(12,17)       | 0.6988 |
| Obs*R-squared | 10.28340 | Prob. Chi-Square(12) | 0.5911 |

|                    |          |                      |        |
|--------------------|----------|----------------------|--------|
| Scaledexplained SS | 2.030149 | Prob. Chi-Square(12) | 0.9994 |
|--------------------|----------|----------------------|--------|

Source: Computed by the authors using EViews 10.

The ARCH test results indicate that the null hypothesis of homoscedasticity (constant error variance) cannot be rejected, suggesting that there is no evidence of heteroskedasticity in the model. This is supported by the p-value of 0.6988, which exceeds the 5% significance level.

#### 4.5.3. Test for Residual Serial Correlation :

To check for the presence of autocorrelation in the error term, we apply the Breusch-Godfrey Serial Correlation LM Test. The estimated p-value is 0.9926, which is higher than the 5% significance level. Therefore, we accept the null hypothesis of no serial correlation, indicating that the residuals are not serially correlated:

**Table (8): Breusch-Godfrey LM Test Results**

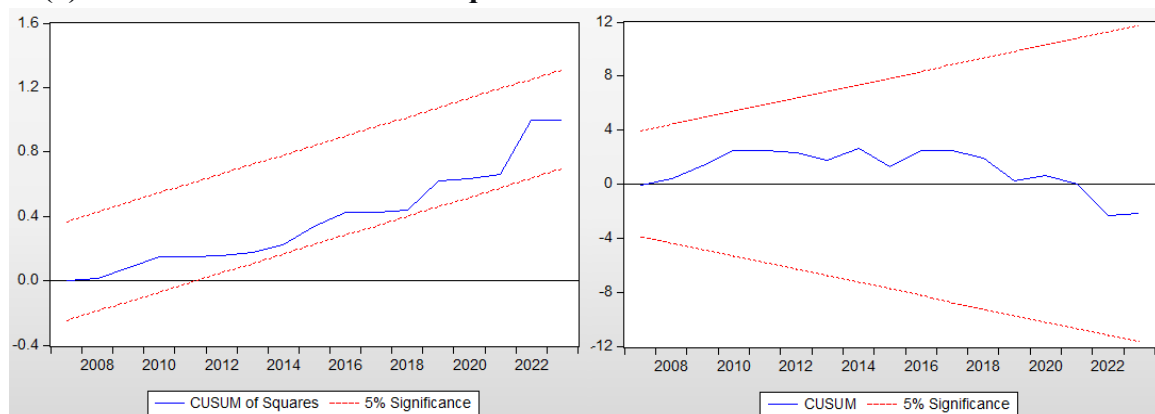
|               |          |                     |        |
|---------------|----------|---------------------|--------|
| F-statistic   | 0.007468 | Prob. F(2,15)       | 0.9926 |
| Obs*R-squared | 0.029843 | Prob. Chi-Square(2) | 0.9852 |

Source: Computed by the authors using EViews 10.

#### 4.5.5. Stability Test Using the Cumulative Sum of Residuals (CUSUM):

To examine the stability of the estimated model, we apply both the cumulative sum of residuals (CUSUM) and the cumulative sum of squares (CUSUM of Squares) tests. These tests are useful for detecting any structural instability or parameter changes over time. The graphical results, presented in the following figure, indicate that the plots of both tests lie within the 5% critical boundaries. Consequently, we conclude that the model is stable and that the estimated short-run and long-run coefficients are consistent and reliable.

**Figure (5): CUSUM and CUSUM of Squares Test Plots**



Source: Computed by the authors using EViews 10.

Following the application of various diagnostic tests to evaluate the adequacy of the estimated model, the results indicate that the model suffers from no standard econometric issues. Therefore, the proposed model is considered both statistically valid and theoretically sound.

#### IV. Conclusion:

A study examining the impact of financial liberalization on welfare in Egypt revealed an inverse relationship between one aspect—domestic financial liberalization, as measured by the volume of credit extended to the private sector as a percentage of GDP, both in the short and long term—and the financial sector's failure to allocate credit effectively. This negative impact is largely attributed to crowding out, whereby banks shift from financing the private sector to financing the government to address budget deficits, and the financial sector's overall failure to direct credit effectively.

The other aspect of financial liberalization (external) also demonstrated a negative relationship with welfare. The expansion of external assets and liabilities indicates deeper financial integration, which could undermine the state's ability to finance social safety nets.

Furthermore, the gains from external financial liberalization are not distributed equitably. In many developing countries, the wealthy, who are often the owners of capital, wield political power that allows them to shape policies to their advantage.

### Recommendations:

- **Adopting a Gradual Approach to Reforms and Avoiding “Shock” Measures** :abrupt liberalization (a “shock”) can lead to short- and medium-term welfare losses, particularly in economies already experiencing financial repression. A gradual reform timetable is recommended, allowing households and businesses sufficient time to adjust, recognizing that phased liberalization is often preferable to immediate liberalization.
- **Improving the Efficiency and Redirection of Government Spending:** Some research has found that fiscal policies accompanying liberalization (such as subsidy reductions) can negatively impact the poor. It is advisable to reassess and streamline social spending programs so that the resulting savings are directed towards priority groups, while reducing untargeted subsidies that benefit the non-poor and replacing them with more effective and targeted programs.
- **Strengthening Social Safety Nets in Conjunction with Reforms** :Research has confirmed that fiscal liberalization often imposes transition costs that disproportionately burden the poor through higher prices and living costs. Therefore, fiscal liberalization should be accompanied by expanding social protection programs (such as conditional cash transfers) to protect the most vulnerable groups and offset the decline in their consumption during the transition period.
- **Coordinating Trade and Financial Market Liberalization:** Theoretical research has indicated that trade liberalization alone, without financial liberalization, may not guarantee benefits and could even exacerbate distortions in savings and consumption. Financial market liberalization is recommended concurrently with trade liberalization, as models have shown that simultaneous liberalization of both markets can be more beneficial to welfare than implementing each reform separately, regardless of whether capital flows are liberalized

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