

# The Impact of Financial Liberalization on Private Savings: The Case of Maghreb Countries Arabia

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## Abstract

The concept of financial liberalization emerged in the early 1970s from the seminal works of McKinnon (1973) and Shaw (1973). These authors conceptualized financial sector liberalization as a key mechanism through which financial development could enhance economic growth. Their theory was well received by international institutions such as the International Monetary Fund (IMF) and the World Bank, which later promoted financial liberalization as a cornerstone policy to stimulate development in emerging economies. According to this framework, liberalizing the financial sector facilitates more efficient mobilization and allocation of financial resources. It also strengthens the coordination between savings and investment, thereby contributing to macroeconomic stability and long-term growth. This article aims to empirically assess the impact of financial liberalization on private savings. To this end, we employ the Ordinary Least Squares (OLS) method along with stationarity tests to examine the relationship between financial liberalization indicators and private savings in Maghreb Arab countries over the 2008-2016 period. The econometric results reveal that economic growth achieved during the period was accompanied by an increase in real per capita income, which in turn positively influenced private savings levels across the region.

*Keywords:* Economic growth, financial liberalization, savings, Maghreb Arabia, unemployment rate, interest rate

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## 1. Introduction

Financial liberalization refers to the removal of state-imposed restrictions, whether quantitative or qualitative, on the operations of financial institutions, the pricing of financial instruments, and the movement of capital within and across borders (Boyer et al., 2004). This process entails several key reforms, including the liberalization of interest rates, the deregulation of credit allocation, the reduction of reserve requirements, the relaxation of capital account restrictions, and the encouragement of private sector participation in financial markets. Advances in technology and digital finance have further accelerated financial deepening by facilitating new modes of financial intermediation and enhancing access to financial services, especially in emerging economies.

The theoretical foundation of financial liberalization lies in the works of McKinnon and Shaw (1973), who argued that financial repression, manifested through interest rate ceilings, directed credit policies, and excessive regulation, distorts savings and investment decisions, thereby impeding economic growth. According to their hypothesis, liberalized financial systems allow interest rates to reflect market conditions, thereby improving the allocation of capital, encouraging savings, and promoting long-term investment. These ideas were widely adopted by international institutions such as the International Monetary Fund (IMF) and the World Bank, which made financial liberalization a central component of structural adjustment programs in many developing countries during the 1980s and 1990s.

However, the empirical evidence on the effectiveness of financial liberalization in boosting private savings is mixed. In some contexts, liberalization has increased financial depth and mobilized savings; in others, it has led to financial instability, excessive risk-taking, and a decline in household savings due to improved access to credit and changes in

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consumer behavior. These divergent outcomes highlight the importance of contextual factors such as institutional quality, inflation control, financial literacy, and the maturity of financial markets.

Savings, for their part, play a fundamental role in sustaining economic growth. Traditionally conceptualized as the residual between income and consumption, savings behavior has evolved into a multifaceted phenomenon influenced by microeconomic variables (e.g., household preferences, demographics, access to financial instruments) and macroeconomic variables (e.g., real income, interest rates, inflation, employment levels). Classical and neoclassical economists view savings as the driver of investment and growth, while Keynesian and post-Keynesian economists argue that savings are the result, not the cause, of income generated by investment. Furthermore, life-cycle and permanent-income theories emphasize the role of intertemporal consumption smoothing, suggesting that households save not only for future needs but also in response to uncertainty and long-term expectations.

In the Arab Maghreb region, countries such as Tunisia, Algeria, Morocco, and Libya have implemented various financial reforms over the past two decades, albeit at different paces and intensities. These reforms aimed to improve financial intermediation, reduce fiscal dominance over banking systems, liberalize interest rates, and expand access to credit. Nevertheless, the effectiveness of these policies in mobilizing private savings remains insufficiently explored, especially from a comparative and empirical perspective. Given the centrality of domestic savings to economic resilience and self-financed development, a better understanding of the financial liberalization–savings nexus is critical for designing effective economic policy.

This study aims to fill this gap by examining the impact of financial liberalization on private savings in four Maghreb countries over the period 2008–2016. Using an Ordinary Least Squares (OLS) econometric model and macroeconomic data from central banks and international databases, we evaluate whether indicators such as the real interest rate, inflation, per capita income, and a composite financial liberalization index significantly influence the private savings rate. Our findings seek to inform policymakers about the conditions under which financial reforms can effectively support savings mobilization and, by extension, sustainable economic development.

## 2. Literature Review

### 2.1. Theoretical Foundations: From Financial Repression to Liberalization

The conceptual debate surrounding the relationship between financial liberalization and private savings originates from the foundational works of McKinnon and Shaw (1973). These authors advanced the financial repression hypothesis, according to which administratively fixed interest rates, credit rationing, and underdeveloped financial systems hinder the mobilization of private savings and the efficient allocation of capital. By removing these constraints through liberalization, primarily via interest rate deregulation and credit market reform, governments can theoretically increase the real return on savings and encourage more forward-looking household behavior.

Building upon this premise, Fry (1988, 1995) systematically developed a macroeconomic framework in which positive real interest rates and liberalized financial markets increase both the volume and efficiency of private savings. Similarly, Agénor and Montiel (2008) analyzed monetary policy in small, open, credit-constrained economies and demonstrated that financial liberalization amplifies monetary transmission only when credit markets function efficiently. The theory posits that with greater returns and fewer restrictions, savings would rise, and resources would be allocated toward productive investment.

However, the assumptions underlying these models—such as perfect capital mobility, rational expectations, and sound institutional frameworks—do not always hold in developing economies. Deaton (1990) pointed out that in countries characterized by income volatility, incomplete markets, and imperfect insurance systems, household saving behavior is often driven by precautionary motives rather than interest rate incentives. Thus, the theoretical link between liberalization and savings is increasingly seen as context-dependent rather than universal.

### 2.2. Empirical Evidence: Divergent and Contextual Results

Despite its theoretical appeal, the empirical evidence on the impact of financial liberalization on private savings is far from conclusive. Studies across various countries and time periods reveal diverse outcomes, often contingent on local economic and institutional conditions.

### 2.2.1. *Negative or Ambiguous Effects*

Several cross-country analyses challenge the assumption that liberalization fosters higher savings:

Bandiera et al. (2000), using a panel of developing countries, found no consistent long-term relationship between real interest rates and private savings. Their results indicate that interest rate liberalization alone may not be sufficient to boost saving behavior.

Jappelli and Pagano (1994) observed a decline in national savings rates following credit market liberalization in both OECD and developing economies. They argue that easier access to consumer credit may weaken the precautionary saving motive, especially in the absence of robust social safety nets.

Thanh (2016), studying 58 developing and transition countries over 25 years, observed a short-term decline in private savings following liberalization. He attributes this to consumption booms driven by increased credit access, although he notes that savings may recover in the long term if institutional capacity improves.

### 2.2.2. *Positive and Indirect Effects*

Conversely, other studies find more optimistic outcomes, particularly where financial systems are deeper and reforms are well-implemented:

On the other hand, Loayza, Schmidt-Hebbel, and Servén (2000) argued that financial liberalization can have indirect positive effects by deepening financial intermediation and increasing access to formal savings instruments. Their cross-country analysis indicates that when liberalization is accompanied by strong institutions and macroeconomic stability, the resulting financial development can facilitate increased savings.

Levine and Zervos (1996), and later Arestis, Demetriades, and Luintel (2001), confirmed that stock market development, as a dimension of financial deepening, correlates positively with long-term growth and mobilization of savings, although the effect is stronger when banking sector reforms are also implemented. Hermes and Lensink (2000), focusing on transition economies, also emphasized that institutional quality is critical to realizing the benefits of financial liberalization.

Mavrotas and Kelly (2002), in a study of 10 African countries, confirm that financial development generally correlates positively with private savings, provided there is macroeconomic stability.

### 2.2.3. *Critical and Structuralist Approaches*

Beyond these two camps, a growing body of literature adopts a critical stance toward the classical liberalization thesis. Taylor (1983), in his structuralist macroeconomic framework, argues that in developing economies characterized by informal markets, financial dualism, and macroeconomic fragility, liberalization may disrupt economic stability rather than foster saving. He emphasizes the importance of reform sequencing and the need to address structural bottlenecks, such as limited financial outreach and institutional weaknesses, before liberalization can be effective. Empirically, Warman and Thirlwall (1994) found that despite higher real interest rates in Mexico during 1960–1990, liberalization failed to boost savings or investment. Instead, it introduced volatility and weakened financial discipline, undermining macroeconomic performance. These critiques underscore that financial reform without institutional preparedness can lead to unintended consequences, including financial instability and declining savings.

## 2.3. *Transmission Channels: How Liberalization Affects Savings*

Several mechanisms have been proposed to explain how financial liberalization affects saving behavior:

- a. **Interest Rate Channel:** As shown by Fry (1995) and McKinnon (1973), higher real interest rates following liberalization should incentivize saving via intertemporal substitution. However, the net effect depends on whether the substitution effect outweighs the income effect, which may reduce the need to save.
- b. **Credit Channel:** According to Jappelli and Pagano (1994), improved access to credit reduces the need for precautionary saving, particularly for previously credit-constrained households.
- c. **Uncertainty and Institutions:** As discussed by Chinn and Ito (2006), the benefits of liberalization are contingent on institutional quality. In weakly regulated environments, liberalization can increase macroeconomic volatility and erode household confidence.

- d. Financial Inclusion: Honohan and Beck (2007) noted that liberalization has limited impact on aggregate savings if it fails to include the underbanked or informal sectors of the economy.

To understand these mixed findings, the literature identifies several transmission mechanisms through which financial liberalization may influence private savings:

**Interest Rate Channel:** Higher real interest rates increase the reward for saving, promoting intertemporal substitution (substitution effect). However, higher rates may also reduce the need to save for future consumption (income effect), potentially offsetting the gain.

**Credit Channel:** Liberalization improves access to credit, reducing the reliance on precautionary savings, especially in credit-constrained households.

**Uncertainty and Institutional Quality:** In contexts of weak institutions or macroeconomic instability, financial reforms may increase volatility and discourage saving in formal institutions.

**Financial Inclusion and Literacy:** If reforms do not extend to underbanked populations, their effect on aggregate private savings will remain limited.

#### *2.4. The Maghreb Experience: A Region of Contrasts*

The four Maghreb countries Tunisia, Morocco, Algeria, and Libya, offer a compelling case for studying the effects of financial liberalization, given their shared regional context but divergent reform paths and institutional capacities.

##### *2.4.1. Tunisia*

Tunisia implemented comprehensive financial reforms beginning in the late 1980s, including interest rate deregulation, banking sector restructuring, and capital market development. According to Jbili, Enders, and Treichel (1997), these reforms contributed to a structural shift in the relationship between financial variables (such as credit to the private sector) and private savings, suggesting improved financial intermediation and household confidence.

##### *2.4.2. Morocco*

Morocco pursued a gradual and institutionally cautious approach to financial reform. Successive efforts to modernize the banking sector, improve monetary policy transmission, and promote capital markets have strengthened financial depth. While the increase in private savings was modest, Morocco remains a relatively stable case where liberalization was not disruptive.

##### *2.4.3. Algeria*

Algeria presents a case of incomplete and uneven liberalization. Despite some initial reforms, the financial system remains heavily state-controlled, with low competition and limited private sector access to credit. This has constrained the potential of liberalization to stimulate saving behavior.

##### *2.4.4. Libya*

Libya's financial sector is characterized by instability, institutional fragility, and low financial intermediation. Limited reforms were introduced in the 2000s, but ongoing political turmoil and a dual-exchange rate system have undermined progress. The predominance of informal saving mechanisms and lack of trust in the banking system severely restrict the effectiveness of liberalization.

#### *2.5. Synthesis and Implications for Empirical Analysis*

The literature reviewed underscores that the relationship between financial liberalization and private savings is highly sensitive to context. Factors such as institutional quality, reform sequencing, macroeconomic credibility, and financial inclusion determine whether liberalization will succeed or fail in mobilizing domestic savings.

For the Maghreb, this means that:

Country-specific approaches are essential for empirical investigation.

One must control for inflation, GDP per capita, institutional quality, and financial development in any econometric specification.

The interaction between financial liberalization and structural factors (such as informality and demographic trends) should not be overlooked.

This context-dependent nature of the savings–liberalization relationship justifies the need for a comparative empirical study across Libya, Tunisia, Morocco, and Algeria, which remain under-explored in the current literature.

## 2.6. Theoretical Background

The relationship between financial liberalization and private savings has been a subject of ongoing debate in the economic literature, particularly since the seminal works of McKinnon and Shaw (1973), who introduced the financial repression hypothesis. According to their models, financial repression—characterized by artificially low interest rates, high reserve requirements, and direct credit controls—distorts saving and investment decisions, undermines the efficiency of financial intermediation, and ultimately hampers economic growth. They argue that liberalizing financial systems, by allowing market-determined interest rates and reducing administrative controls, would encourage savings and improve the allocation of capital.

The core idea behind these models is that higher real interest rates, resulting from liberalization, increase the return on savings and thus incentivize households to save more. In turn, a deeper and more efficient financial system should facilitate the channeling of savings into productive investments, promoting long-term growth. This classical approach assumes rational behavior, perfect capital mobility, and well-functioning financial markets.

However, the empirical literature has found ambiguous and often contradictory results, which challenge the theoretical predictions. One possible reason lies in the heterogeneity of country experiences, particularly in developing economies where financial systems are often underdeveloped, and where institutional quality, regulatory enforcement, and macroeconomic stability vary widely.

On one hand, proponents of financial liberalization highlight its potential benefits. Loayza et al. (2000) argue that liberalization, by improving financial depth and intermediation, can enhance savings through broader access to diversified financial products and improved risk management tools. In this view, the positive impact of liberalization is conditional on the presence of robust institutions and effective financial regulation. Similarly, Mavrotas and Kelly (2002), analyzing a group of African countries, suggest that the deepening of the financial system can positively influence savings, particularly when households gain access to secure and profitable savings instruments.

On the other hand, several studies report negative or neutral effects of liberalization on private savings. Bandiera et al. (2000) find that in many countries, financial reforms did not result in a significant increase in savings, and in some cases even contributed to a decline. They argue that relaxation of liquidity constraints and increased access to credit often lead households to reduce precautionary savings, especially when future income becomes more predictable or when borrowing replaces saving. Jappelli and Pagano (1994) similarly suggest that liberalization reduces the need for self-insurance through saving, particularly in economies where credit markets were previously rationed. In this context, financial liberalization can lead to higher consumption rather than increased savings, especially in the short run.

From a theoretical standpoint, the ambiguity of these findings can be explained by extending the classical models to incorporate behavioral factors and precautionary motives. For instance, if households save not only to earn interest but also to smooth consumption in the face of income volatility or limited social insurance, then access to credit markets (a result of liberalization) may substitute for such savings. Moreover, in environments characterized by macroeconomic instability—such as high inflation, volatile income, or weak regulatory frameworks—the liberalization of financial markets may not produce the expected benefits, and can even trigger financial crises, as suggested by Stiglitz (2000).

In the specific context of developing and emerging economies, several structural and institutional features may condition the impact of financial liberalization on savings. These include the level of financial literacy, the depth and reach of banking systems, informality, and the credibility of monetary and fiscal policy. In regions like the Maghreb, where informal finance remains prevalent and banking services are often concentrated in urban areas, the theoretical link between interest rates and saving behavior may be particularly weak.

In sum, while theoretical models advocate for financial liberalization as a tool to stimulate savings and growth, real-world outcomes are more nuanced. The effect of liberalization on savings is not automatic and depends on a constellation of factors including institutional quality, macroeconomic stability, access to financial services, and the

sequencing of reforms. These insights underscore the need for empirical, country-specific analyses to better understand how liberalization policies affect savings behavior in different economic contexts.

## Methods

### Scope and Data Sources

This study investigates the relationship between financial liberalization and private savings in four Maghreb Arab countries-Tunisia, Algeria, Morocco, and Libya-over the period from 2008 to 2016. These countries, while geographically and culturally similar, have experienced diverse paths in terms of financial sector reform, making them particularly suitable for a comparative study. The analysis is based on annual macroeconomic data collected from national sources, including central banks and statistical institutes, as well as international organizations such as the International Monetary Fund (IMF) and the World Bank. The dataset combines national-level indicators relevant to both the financial environment and household saving behavior.

### 2.7. Variable Definitions and Construction

The dependent variable is the private savings rate, defined as the ratio of household savings to gross domestic product (GDP). This measure captures the share of national income that households choose to save rather than consume and serves as a proxy for aggregate saving behavior. The independent variables reflect both financial and macroeconomic determinants. The real interest rate (RIR) is calculated as the nominal deposit interest rate minus the inflation rate, representing the real return on financial savings. A positive RIR theoretically provides an incentive for households to save. The financial liberalization index (FLI) is a composite measure reflecting the degree of openness and deregulation of the financial system. It is constructed from five indicators: credit to the private sector (as a percentage of GDP), broad money supply (M2), quasi-money, the reserve requirement ratio, and the monetary base relative to GDP. Each component is normalized using z-scores, and the average of these standardized values constitutes the index.

Inflation (INF) is measured as the annual percentage change in the Consumer Price Index (CPI). The effect of inflation on saving is theoretically ambiguous: while high inflation may erode the real value of savings and thus discourage saving, it may also encourage precautionary savings in the face of uncertainty. Lastly, real per capita income, computed as real GDP divided by the total population, serves as a proxy for households' purchasing power. In line with the life-cycle and permanent income hypotheses, higher income is generally associated with a greater capacity to save.

### 2.8. Model Specification

To analyze the impact of financial liberalization on private savings, the following Ordinary Least Squares (OLS) regression model is estimated:

$$S_{it} = \alpha_0 + \alpha_1 \text{ILF}_{it} + \alpha_2 \text{RIR}_{it} + \beta_1 \text{INF}_{it} + \beta_2 \text{RPC}_{it} + \varepsilon_{it}$$

where:

- S = Private savings rate
- FLI = Financial liberalization index
- RIR = Real interest rate
- INF = Inflation rate
- RPC = Real per capita income
- $\varepsilon$  = Error term

Stationarity tests were performed on the variables to ensure the robustness of the model. All series were found to be stationary or transformed accordingly. The Durbin-Watson statistic was used to test for autocorrelation, and multicollinearity was evaluated using correlation matrices.

### 2.9. Estimation Procedures and Diagnostic Tests

Prior to estimation, all-time series were subjected to stationarity testing using standard unit root tests, including the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests. Non-stationary variables were appropriately transformed to ensure that the regression model yields consistent estimates. Diagnostic tests were conducted to verify the reliability of the model. Autocorrelation was evaluated using the Durbin-Watson statistic. Multicollinearity among

independent variables was assessed using correlation matrices and the calculation of Variance Inflation Factors (VIF). Furthermore, heteroscedasticity was tested using Breusch-Pagan and White tests to confirm the presence or absence of non-constant variance in the residuals.

### 3. Result and Discussions

#### 3.1. Regression Output

**Table 1.** The OLS regression results

Variable	Coefficient	Std. Error	t-Statistic	p-Value
Constant	17.293	2.935	5.890	0.000
FLI	-0.309	0.1124	-2.754	0.010
RIR	0.417	0.9151	0.456	0.652
INF	-0.027	1.0090	-0.027	0.979
RPC	0.228	0.0327	6.984	0.000
R <sup>2</sup>	0.9103			
DW	0.7212			
F-stat	40.636			0.000

The estimated coefficients from the OLS regression are reported in Table 1. The model includes the four independent variables previously described. The high R-squared value of 0.9103 suggests that approximately 91% of the variation in the private savings rate is explained by the selected variables, indicating strong explanatory power. The F-statistic is statistically significant at the 1% level, confirming the overall relevance of the model.

#### 3.2. Interpretation of Results

The coefficient on the financial liberalization index is negative and statistically significant at the 5% level. This finding implies that increased financial liberalization is associated with a reduction in private savings. This result is consistent with the hypothesis that liberalization may reduce liquidity constraints and provide easier access to credit, leading households to borrow and consume more, thereby reducing their need to save. In developing economies like those of the Maghreb, where precautionary saving motives remain strong, liberalization may therefore unintentionally suppress savings rates if not accompanied by appropriate institutional safeguards. The real interest rate shows a positive sign, as expected, but its effect is not statistically significant. This suggests that in the Maghreb context, the real return on savings does not significantly influence saving behavior. Several factors may explain this, including shallow financial markets, low levels of financial inclusion, or a weak interest rate transmission mechanism due to structural inefficiencies in the banking sector.

Inflation also displays a negative but statistically insignificant coefficient. Although high inflation theoretically reduces the real value of financial assets and may discourage saving, the lack of statistical significance may indicate that inflationary expectations were not sufficiently persistent during the study period to affect saving behavior, or that households rely on informal savings mechanisms less sensitive to inflation. In contrast, real per capita income has a strong and statistically significant positive effect on the private savings rate. The coefficient indicates that increases in income are associated with higher saving capacity, supporting the income hypothesis. This result underscores the critical role of sustained income growth in boosting domestic savings and highlights income as the most robust determinant of saving behavior in the Maghreb region.

#### 3.3. Comparison with the Existing Literature

The empirical findings of this study align with several previous works. The negative impact of financial liberalization on savings corroborates the conclusions of Bandiera et al. (2000) and Jappelli and Pagano (1994), who documented similar patterns in developing and transition economies. Meanwhile, the strong and positive influence of income on savings is consistent with the studies of Loayza et al. (2000) and Mavrotas and Kelly (2002), who emphasized the role of structural and income-based determinants. In the specific case of the Maghreb, Jbili, Enders, and Treichel (1997) highlighted the importance of reforms in enhancing financial intermediation but also noted that savings responses are heavily influenced by income and institutional conditions.

#### 4. Conclusions

This study aimed to empirically assess the impact of financial liberalization on private savings in four Maghreb countries-Tunisia, Algeria, Morocco, and Libya-over the period 2008 to 2016. Using an OLS regression framework and a composite index of financial liberalization, the analysis explored how financial and macroeconomic variables influence household saving behavior.

The key finding of the study is that financial liberalization has a statistically significant negative effect on private savings. This suggests that liberalization, in the absence of adequate institutional and regulatory frameworks, may reduce households' incentives to save by facilitating easier access to credit and encouraging current consumption. The real interest rate and inflation rate were found to have no significant effect, pointing to the limited responsiveness of household saving to traditional monetary instruments in the region. In contrast, real per capita income emerged as a strong and significant determinant, reinforcing the view that income growth is fundamental to increasing saving capacity.

From a policy perspective, these findings call for a cautious and sequenced approach to financial liberalization. Reforms should be accompanied by the development of sound regulatory institutions, strengthened financial intermediation, and greater financial literacy among the population. Policymakers should also prioritize inclusive income growth through employment creation and productivity-enhancing investments, which are likely to have a more durable effect on national savings. Furthermore, the promotion of safe and accessible saving instruments, particularly for lower-income households, can help channel informal savings into the formal financial system.

Future research should build on this work by employing panel data methods to account for unobserved heterogeneity and address endogeneity concerns. Incorporating additional variables, such as measures of institutional quality, financial inclusion, or demographic factors, would offer a more nuanced understanding of the dynamics at play. Expanding the temporal and geographic scope of the analysis could also yield insights applicable beyond the Maghreb, contributing to a broader understanding of the interaction between liberalization and saving behavior in developing economies.

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