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Assessing the Effectiveness of FinTech as a Strategic Instrument for Enhancing Financial Stability During Periods of Uncertainty Using the ARDL Methodology: "A Case Study of Palestine"

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Abstract

This study aims to analyze the impact of financial technology (FinTech) on banking stability in Palestine under conditions of uncertainty. It uses an autoregressive distributed lag (ARDL) model, utilizing quarterly data from Q1 2015 to Q4 2024. The results revealed a positive and significant long-run relationship between the use of FinTech and banking stability, reflecting the vital role of digital tools in improving banking efficiency and expanding financial inclusion, and represent a strategic tool capable of enhancing financial stability and building a banking system that is more resilient and responsive to shocks. Furthermore, results showed that the correction rate toward equilibrium was approximately 53%, further strengthening the reliability of the long-term relationship between the variables. Based on these results, the study recommends investing in digital infrastructure, with priority given to remote and crisis-affected areas. It also emphasizes the importance of designing and implementing awareness and training programs to promote the safe and effective use of digital financial services, as well as developing an effective cybersecurity strategy in the banking sector that is consistent with the increasing level of digitization. Finally, support digital financial inclusion as a more effective alternative to traditional financial inclusion, particularly in the Palestinian context, which suffers from complex structural and political challenges.

Keywords: *Financial technology, financial inclusion, financial stability, economic growth.*

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I. Introduction

In recent years, the world has witnessed significant acceleration and radical transformations in the economic and financial structure, coinciding with rapid technological developments. The impact of these technological developments can be clearly seen in consumption patterns, payment methods, and banking systems. Within this framework, financial technology has emerged as a pivotal force in reshaping the global banking system, driving major transformation by offering innovative alternatives to traditional banking services. It has also played a role in enhancing financial inclusion, reducing transaction costs, and facilitating access to financial services in remote areas. Hence, the importance of digital financial inclusion as a fundamental pillar of the modern financial system is highlighted (Ibourk & Elouaourti, 2023; Kamara & Yu, 2024).

The IMF (2017) describes financial technology as "a new wave of technological innovations" that is rapidly changing the financial sector. However, these technologies include digital payment applications, e-wallets, crowdfunding platforms, mobile banking, blockchain, and digital currencies.

Therefore, these developments at the financial institutions' level will affect financial stability, as institutions must keep pace with global developments while simultaneously meeting modern regulatory requirements. This does not mean that there are no risks associated with adopting technological products. Despite many positives, there are also negatives, perhaps the most significant being cybersecurity risks (Sahi & Flaifel, 2025; IMF, 2023). Ultimately, studies indicate that financial technology has a positive impact on financial stability. However, here the question arises about the role of this technology in conditions of uncertainty and turmoil: is it effective and an alternative, or is its effectiveness weak?

In this context, the case of Palestine stands out as an exceptional case, due to significant restrictions are imposed on monetary and fiscal policy instruments, and under these circumstances, may no traditional policy can be effective, in this context the circumstances are experiencing unprecedented difficulties, in addition to the persistent obstacles represented by the Israeli occupation, absence of a national currency, the use of multiple currencies (the Israeli shekel, the Jordanian dinar, and the US dollar), and the accumulation of the shekel. Here, it is necessary to analyze the extent to which financial technology can serve as an effective tool for financial stability and mitigate the negative impact of uncertainty.

On the other hand, in accordance with the Palestine Monetary Authority (PMA) strategy, it recognizes the importance and future of financial technology. PMA pays great attention to all modern technological developments related to banks' operations. Within the framework of its strategic plan, PMA has adopted financial technology (Fintech) as one of the themes and initiatives it is working on. PMA also views the issue of financial technology through the lens of social and national responsibility, recognizing its contribution to achieving financial inclusion and strengthening the steadfastness of the Palestinian people on their land and homeland. So, PMA seeks to provide innovative financial services aligned with international developments in this field.

The novelty of this study lies in its being one of the few specialized studies on the Palestinian context, as well as in the topic itself. It discusses a policy considered crucial in light of the Palestinian situation, as well as a strategy at the official level for digital transformation. In this context, the banking sector is considered one of the most important drivers of this change. This study falls within complex Palestinian circumstances, and it is believed that digitization in the banking sector may provide it with greater flexibility, enhance its service provision to citizens, and, at the same time, maintain its stability.

Accordingly, exploring the relationship between financial technology and financial stability in Palestine under conditions of uncertainty is of great importance, both theoretically and practically. The study analyzes the effectiveness of financial technology in the Palestinian context, examining whether it offers an opportunity to enhance financial stability or is constrained by complex political and economic factors. Ultimately, the study aims to provide an integrated analytical framework to clarify this dynamic and, in light of this, propose recommendations to maximize the benefits of financial technology in enhancing financial stability in Palestine.

II. Literature review

Financial technology (FinTech) is rapidly evolving globally, becoming a major driver of financial inclusion, which in turn is a fundamental pillar of financial stability. In this context, numerous applied studies have examined the relationship between the expansion of FinTech use and the level of financial inclusion, drawing on real-world experiences across various countries and regions.

Kasri et al (2022) .aim to analyze the impact of the spread of digital payments on the stability of Indonesian banks, using monthly data from 2013 to 2021. To achieve this goal, digital payments — specifically the Payment Penetration Ratio (PPR) — were used as an indicator of financial technology.

In contrast, financial stability was measured using the Bank Stability Index via the Z-score method. The data were analyzed using VECM and VAR models. The results revealed a cointegrating relationship between the spread of digital payments (PPR) and banking stability, indicating a long-term equilibrium relationship in Indonesia. In addition, there is a causal relationship between digital payments and banking stability, with a short-term positive association between the two variables. The results of the study reinforce policies that create a regulatory environment that supports a flexible banking system.

In the same context ,Mustafa (2014) analyzed the impact of digital payment systems on the stability of Jordanian banks, accounting for capital adequacy, using annual data from 2004 to 2022. The main variables were represented by various digital payment indicators, including the number of electronic payment cards, the number of mobile users, and the volume of settlements processed through clearing and electronic payment systems. Banking stability was also measured using the Z-score method, and relied on VAR and VECM models. It was concluded that the expansion of digital infrastructure and payments may cause short-term liquidity pressures, but it is positively related to financial stability in the long term. In addition, capital adequacy (CAR) acts as a risk-mitigating factor by addressing sudden fluctuations that may result from large volumes of digital transactions. Accordingly, it is assumed that policies should be put in place that stimulate innovation in digital payments while ensuring the stability of the banking sector and achieving greater flexibility for it, while at the same time optimally managing liquidity and strengthening reserves to address the challenges of seizing opportunities arising from Digital payments.

Yin et al. (2022) examined the impact of fintech on the stability of Chinese banks by comparing two periods of financial technology, with the second phase more advanced and marked by significant digitalization. The study covered the period 1995-2018 and used several explanatory and control variables, in addition to financial technology. These variables relate to institutional regulation, the credit-to-deposit ratio, economic growth, and government stability. The impact of all these factors on bank stability, as measured by the Z-score normalization technique, and on non-performing loans was studied using OLS regression and correlation analysis. The results revealed that the second wave of fintech, represented by the significant expansion of digital payments and platforms, was associated with improved bank stability and a relative decline in NPLs, meaning its effect was supportive of stability.

Chand et al. (2025) examined the impact of financial technology development on banks' risk-taking behavior and profitability in Fiji from 2000 to 2024. Technological development was measured using a dummy variable for mobile banking service use, along with control factors including bank size, leverage, liquidity, and market concentration. The dependent factor was risk tolerance, measured using the Z-score index, based on return on assets and capital-to-assets ratios. The methodology adopted included the profitability factor. The study relied on fixed- and random-effects models, as well as pooled OLS and the Generalized Method of Moments (GMM) .The results showed that the development of FinTech through the adoption of financial technologies reduces banks' exposure to risks. The results also showed a positive correlation between FinTech and profitability, indicating that investment in FinTech will enhance banks' profitability and ultimately contribute to their stability. In light of this, the study emphasizes the importance of increasing banks' investments in technological innovation to enhance financial stability and performance in small economies. In addition, the study recommends strengthening regulatory and institutional frameworks to guide and develop FinTech in the banking sector.

Nguyen and Dang (2023) analyzed and examined the impact of FinTech development on financial stability in Vietnam, with market discipline as a mediating variable. The study included 37 commercial banks from 2010 to 2020 and employed panel regression models. The study revealed that FinTech development is associated with lower financial stability of banks in Vietnam when it is not accompanied by effective market discipline. However, market discipline mitigates the adverse effects on stability and is considered a key factor in maintaining financial stability as financial technology expands. This requires improving financial disclosure and increasing data transparency. Therefore, less stable banks should have greater regulatory requirements when expanding technology.

Sahi & Flaifel (2025) aimed to analyze the role of financial technology in achieving financial stability in the Iraqi banking sector by evaluating the impact of adopting electronic financial services on financial stability indicators between 2017 and 2023, the period of digital transformation and adoption. The standardized index of financial stability was calculated using a Z-score based on several indicators, including liquidity, return on assets, and equity. Financial technology was also measured through several indicators related to the spread and use of electronic banking services, as well as through data analysis using correlation and regression. The study revealed a positive and statistically significant

impact of adopting financial technology on banks' stability, while emphasizing the importance of designing banking services to ensure benefits, service quality, and ease of access.

Badwan and Awad (2022) aim to analyze the impact of financial technology (FinTech) advancements on economic growth in Palestine during the period from 2008 to 2021, using annual data from official bodies such as the Ministry of National Economy and the Palestine Monetary Authority. The study used the Autoregressive Distributed Lag (ARDL) model and the Autoregressive Error Correction Model (VECM) to analyze the long- and short-term relationships between FinTech indicators and economic growth. Growth was measured by GDP per capita, while FinTech indicators included internet penetration, broadband and mobile phone subscriptions, and the number of ATMs and bank branches per 100,000 people. The results showed a statistically significant positive relationship between the development of FinTech and the promotion of financial inclusion, which, in turn, supports long-term Palestinian economic growth. The study recommends strengthening the technological infrastructure and adopting policies that encourage the use of FinTech to increase access to financial services and stimulate economic development.

A 2023 study by the International Monetary Fund examined the impact of digital transformation on companies' economic resilience to economic shocks, focusing on the role of fiscal policies in promoting this transformation. The study covered the period from 2010 to 2020 and analyzed economic and trade data from various countries. The primary objective of the study was to understand the relationship between fiscal policies that support digitization and companies' ability to adapt to economic crises, such as financial crises or sudden economic changes. In this context, the study used the "Digital Transformation Readiness" (DTR) index to measure companies' readiness to adopt digital technology. It adopted a quantitative analysis methodology, applying statistical models such as multiple regression to analyze economic data from companies from multiple countries, while examining the impact of fiscal policies on companies' readiness for digital transformation. The results showed that companies that benefited from fiscal policies that encourage digitization demonstrated greater ability to adapt to economic crises, thereby improving efficiency, reducing operating costs, and enhancing macroeconomic productivity. The study also showed that supporting digital governance helped motivate the private sector to adopt digital technologies. The study emphasizes that digital transformation is not just a technological choice, but a crucial factor in increasing companies' resilience and enhancing the economy's ability to adapt to economic changes and shocks. Based on the findings,

the study recommended adopting fiscal policies that support digital transformation, such as tax incentives and the development of digital infrastructure, and enhancing public-private sector collaboration to facilitate widespread technology adoption. Supportive fiscal policies, such as IT tax incentives and digital infrastructure development, were shown to accelerate digital transformation in companies significantly.

Kamara and Yu (2024) analyzed the impact of FinTech on financial inclusion in 22 African countries, using World Bank data from 2004 to 2022. The study relied on principal component analysis (PCA) to assess relationships among variables, with FinTech defined as the use of mobile phones to provide financial services. The results showed that mobile phone use is one of the most prominent indicators of FinTech development on the African continent. However, its impact on traditional financial inclusion remains limited, highlighting the need to expand the scope of other digital tools, such as electronic payment systems.

In the Middle East and North Africa region, Ibourk and Elouaourti (2023) conducted a similar study, using internet and mobile phone penetration indicators as measures of financial technology adoption. Using descriptive and principal component analysis, the results indicated that digital tools contribute to enhancing financial inclusion, despite their limited use compared to other countries. The results emphasized the need to improve digital infrastructure and expand the beneficiary base of digital financial services in the region. In the same context, Owakah et al. (2023) used a lag autoregressive (VAR) model to analyze the relative impact of fintech components on financial inclusion in Nigeria. The study concluded that the internet is the most influential factor among other tools such as automated teller machines (ATMs), point-of-sale (POS), and mobile banking, highlighting its pivotal role in promoting the use of formal financial services.

The studies of Djoufouet and Pondie (2022) and Muneera et al. (2023) examined the relationship between mobile phone and internet penetration in Sub-Saharan Africa and India, on the one hand, and financial inclusion levels, on the other, using regression analysis models. The results showed that a 1% increase in mobile phone usage leads to a 0.67% increase in financial inclusion, reflecting the positive, direct impact of expanding digital tools on financial inclusion. In another study, Menza et al. (2024) focused on the impact of the spread of financial technology tools in rural areas, including ATMs, mobile banking, point-of-sale terminals, and financial agents. Using stochastic models, the study demonstrated

that the availability of these tools in remote areas significantly improves access to financial services, thereby supporting financial stability by reducing geographical gaps in access to finance.

In conclusion, the global financial system has undergone profound changes in recent years, driven by the rapid development of modern technologies, particularly in the financial services and banking sectors. This development has contributed to the emergence of new patterns of financing and banking transactions, largely dependent on digitalization and the use of financial technology (FinTech) tools. This new reality has created challenges for the stability of banking systems, but it has also opened promising opportunities. Contemporary studies focus on analyzing the relationship between the adoption of financial technology and its impact on financial stability by examining indicators such as digital payments and the use of technical solutions and linking them to stability measures such as the Z-score.

III. Data and Methodology

Based on what was previously mentioned, the discussion in previous studies, and an analysis of the Palestinian reality appropriate to its specificity, this section explains the variables and data of the study model, as well as the methodology followed in the analysis, to achieve the study's purposes.

1. Data and Variables

This section explains the method for calculating the model's main variables, namely the banking stability index and financial technology.

Dependent Variable:

Banking Stability Index (BSI)

The following variables in Table 1 were used to constitute the banking stability index (BSI), according to the methodology for calculating the financial stability index in Palestine (Abu Zaitoun, 2019).

The data extracted from the Palestine Monetary Authority’s stability report, and monetary and banking development reports during the period 2015 Q1 - 2024 Q4.

TABLE 1: BANKING STABILITY INDEX (BSI)

Indicator	Sub-indicator	Weight (W_b)
Capital	Capital adequacy.	20%
	Leverage.	2.5%
	Non-performing loans after provision to capital	2.5%
Asset-quality	Non-performing/total loans	15%
	Provision/ Non-performing loans	15%
liquidity	Liquid assets/total assets	10%
	Liquid asset/short-term liability	10%
Profitability	Return on assets.	7.5%
	Return on equity	7.5%
	Net interest/ income	5%
	Expenses without interest/income	5%

Data were normalized through using the standard value Z-score or empirical normalization, like many studies using z-score to measure stability (Kasri et al,2022; Yin et al, 2022; Chand et al, 2025; and Sahi & Flaifel, 2025), then the normalization formula used:

$$I_{it}^{n} = \frac{I_{it} - Min(I_i)}{Max(I_i) - Min(I_i)}$$

Where:

I_{it}= The value of the variable before normalization.

Min & Max represent the minimum and maximum values of the variable, respectively. Then the BSI index is calculated as a weighted average of the above normalized variables, and equals:

$$Bsi = \sum_{1}^{11} W_b \; I_b$$

Where:

Bsi = the value of the banking stability index.

W_b = The weight of the variable.

I_b= The value of the normalized variables.

Independent Variable:

Financial Technology (FT):

Many studies have used digital payments or digital settlement, directly or indirectly, within various indicators as a proxy for development or the level of financial technology. For example, Mustafa (2024) used indicators such as the number of electronic payment cards, mobile phone users, and the volume of electronic settlements as direct indicators of fintech diffusion. Kasri et al. (2022) used the Payment Penetration Ratio (PPR) to measure the penetration of digital payments as an indicator of fintech development, and Yin et al. (2022) discussed two phases of fintech development in China, focusing on the significant increase in digital payment volume in the second phase as evidence of fintech expansion.

According to available data regarding Palestinian's case, most digital transactions in banks are carried out through the use of (points of sale, internet banking, and mobile banking applications). In this context, and through mobile banking applications, many digital systems are used or accessed, such as E-SADAD and I-BURAQ. Accordingly, operations via the banking application include those carried out using the newly developed digital systems. Therefore, Financial technology (FT) in this study represents the aggregate value of unique digital transactions executed through the Palestinian banking system. To ensure accuracy and avoid double-counting across interconnected channels — such as Point-of-Sale (POS), Online Banking, and Mobile Banking — transactions are classified by their originating channel and verified using unique transaction identifiers before aggregation.

$$FT = \sum_{1}^{n} POS + OB + MB$$

Where:

FT: Financial technology.

POS: Digital transaction through the point of sale.

OB: Digital transaction through online banking.

MB: Digital transaction through Mobile-banking.

Control variables

Other variables were also used in the model to explain banking stability, in line with previous studies and the Palestinian context, and with available data, including GDP, credit facilities, interest rates, Capital adequacy, and uncertainty. In conclusion, the model consists of the variables in the following table.

TABLE 2: MODEL VARIABLES

Variable	Description	Note
BSI	Banking Stability Index	Dependent Variable
LFT	Logarithm of Financial Technology	Independent Variables
GDP	GDP Growth Rate	Control Variables
LF	Logarithm of Credit Facilities	
I	Interest Rate	
CAR	Capital adequacy ratio	
UNC	Economic Uncertainty	

The data used in this study were obtained from PMA, quarterly observations over an extended period (2015 Q1 – 2024 Q4), and regard financial technology data its source is the banks operating in Palestine and is not extracted from the PMA databases, except for the data of I E-SADAD, and I-BURAQ, and natural logarithms were used for some variables in order to stabilize variances, reduce skewness, and easier to interpret coefficients.

2. Methodology

This study employs the Autoregressive Distributed Lag (ARDL) approach to examine the short-run and long-run dynamics between the Banking Stability Index (BSI) and its explanatory variables, namely Financial Technology (LFT), Gross Domestic Product (GDP), credit facilities (LF), Interest Rate (I), capital adequacy ratio (CAP), and Uncertainty (UNC). The ARDL model introduced by Pesaran et al. (2001) allows for mixed integration orders of the variables, accommodating both stationary at level I(0) and I(1), unlike many traditional integration tests that require large datasets for reliable results. The ARDL approach is suitable for small sample sizes. Moreover, it facilitates the simultaneous estimation of both short-run and long-run relationships. It helps address issues like serial correlation and omitted variables, and in the event of the existence of cointegration among variables, then estimation of the long-term equation by using the formula**:**

$$y_t = \beta_0 + \sum_{i=1}^{p} \partial_i \, y_{t-i} + \sum_{i=0}^{q} \theta_i x_{t-1} + \epsilon_t$$

Where ∂_i, θ_i represents the coefficients of variables, p and q represent lag periods, yt is the dependent variable, xt is a set of stationary exogenous variables, and ε represents the random error term.

Then, specifications of the ARDL model for the Error Correction Model and short-run dynamics derived by this ECM formula:

$$ECM: \Delta y_t = c + \sum_{i=1}^{p} \partial_i \, \Delta y_{t-1} + \sum_{i=0}^{q} \theta_i \, \Delta x_{t-1} + \omega ECT_{t-1} + \upsilon_t$$

Where ECT_{t-1} represents the error correction term, and all coefficients in the short-run formula capture the short-term dynamics that guide the model toward equilibrium. The parameter ω represents the error correction term, reflecting the speed at which deviations from the long-run equilibrium are corrected. For the short-term model estimates to be valid, ω is expected to be negative and statistically significant (Ibrahim, 2025).

IV. Recent financial technology developments in Palestine:

Thirteen banks operate in Palestine, seven of which are local banks providing services through 215 branches and offices in the West Bank and 39 in the Gaza Strip. Six foreign banks operate through 113 branches and offices in the West Bank governorates and 17 branches and offices in the Gaza Strip. This brings the total number of branches and offices operating in various regions to 384, equivalent to 1.2 branches per 10,000 adults. In this context, it is worth noting that most of the banking sector's infrastructure in the Gaza Strip has been damaged and disrupted (Palestine Monetary Authority, 2024).

1. Electronic Payment Tools and Systems:

Regarding the electronic infrastructure and the electronic banking services provided through it, there are many tools and channels like ATMs, bank cards, online banking, in addition to point-of-sale (POS) devices and Mobile banking applications, also E-SADAD and I-BURAQ**,** which have witnessed remarkable development, especially in terms of spread and use. In this regard, it is necessary to highlight the digital infrastructure developed by the Palestine Monetary Authority, which includes (Palestine Monetary Authority, 2024):

- **The Electronic Bill Display and Payment Platform (E-SADAD):** This is "a digital platform managed by the Palestine Monetary Authority, which aims to display and pay bills electronically by linking all service providers (billers) with all banks and electronic payment companies. This platform enables inquiries and payments for bills, fees, and installments for all services from private-sector companies, government departments, local authorities, and universities.
- **I-BURAQ instant payment system**, supervised and managed by the Palestine Monetary Authority (PMA), allows bank customers and e-wallet users to make instant transfers and payments within seconds, in all currencies, and without commissions. The PMA launched the IBURAQ instant payment system, enabling customers to send and receive payments instantly via online banking and mobile applications. It was launched in the Gaza Strip in May 2024 to alleviate the Strip's liquidity crisis and provide digital alternatives to traditional banking services, following the destruction of infrastructure and the shutdown of many bank branches. Later that July, it was launched in the West Bank.
- **The National Key System 194:** "is a system that links all bank ATMs and electronic points of sale operating in Palestine within a unified network. This allows any citizen holding an ATM card to withdraw from any ATM or use any point of sale in Palestine at any time and anywhere, without having to be restricted to withdrawing from the ATMs of their designated bank".

In light of the above developments in the field of financial technology and in continuation of facilitating the digital transformation, the Monetary Authority launched **Digital Financial Identity (iDplus),** which represents a new digital project aimed at enhancing the integration of financial technology into the Palestinian banking sector, facilitating more efficient and secure financial transactions for individuals and businesses remotely. The digital financial identity provides innovative solutions to ensure digital identity security and comprehensive protection for the customer's digital operation, from securing devices, applications, and network connections to authentication, transaction verification, and digital signatures, enhancing trust and security in digital financial transactions.

2. Developments in electronic services

- **Financial outreach and inclusion indicators:**

It is noted that during the period (2020-2024), which is the period in which the Monetary Authority focused on digital transformation, there was a relative stability in the Number of branches & Offices,

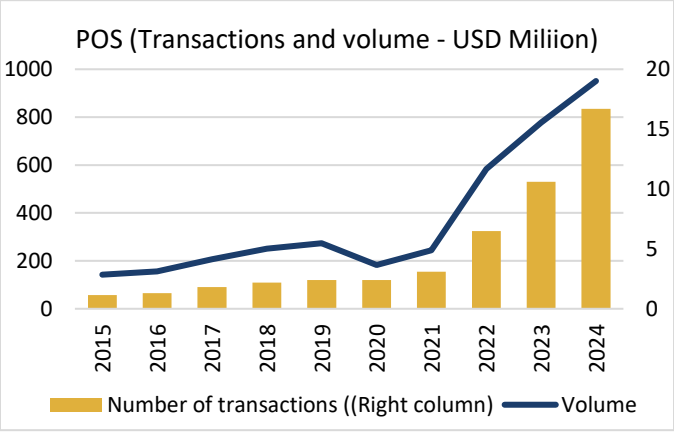
this indicates that there is a trend towards digital services through newly developed digital applications and systems, rather than traditional services through attendance at bank headquarters and branches.

Therefore, there is no need for many new physical branches given the trend towards digitization. There is also relative stability in the number of ATMs and at the same time a noticeable increase in the number of cards and points of sale, which indicates a greater reliance on payment via cards through points of sale, which contributes to the digital transformation and reliance on purchasing digital tools, as the number of points of sale increased by four time during 2020-2024.

TABLE 3: FINANCIAL OUTREACH AND INCLUSION INDICATORS

Items	2020	2021	2022	2023	2024
Number of Banks					
Total	**14**	**13**	**13**	**13**	**13**
Number of branches & Offices					
Total	**379**	**379**	**378**	**385**	**384**
Other indicators					
Customer accounts (number)	3,777,862	4,200,944	4,655,238	4,393,783	4,582,954
ATM's machines (number)	703	710	724	737	741
Point of sales (number)	7,221	8,005	14,192	20,041	29,258
Credit cards (number)	91,476	94,357	95,440	131,658	132,280
Debit cards (number)	997,861	1,165,182	1,308,788	1,680,589	1,812,243

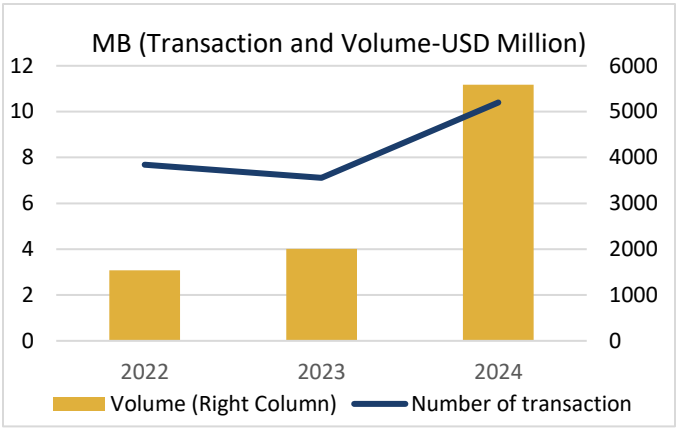
- **Point of sale:**



Points of sale (POS) are among the most important channels for electronic payment. They have witnessed significant development and a continuous increase in both transaction volume and the number of transactions. It is noteworthy that POS witnessed a significant increase during 2023 and 2024, as the Monetary Authority accelerated its digital transformation in response to restrictions that forced it to encourage and take rapid steps in this direction. In this context, the number of transactions executed through POS in 2024 reached 16.7 million, with a value

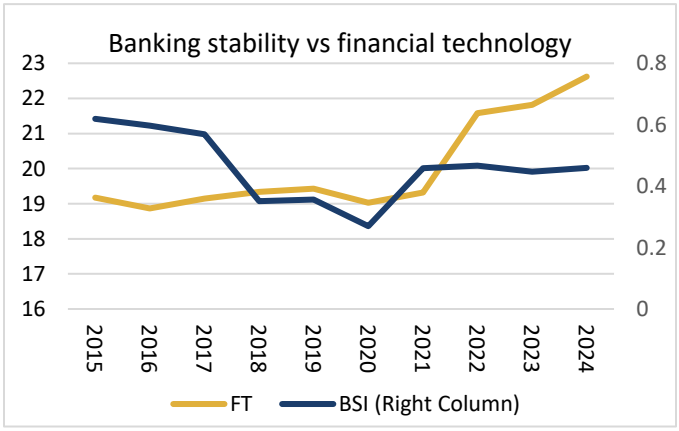
of $951 million, compared with around 3.1 million transactions and $245 million, respectively, in 2021. This demonstrates the extent of development and the trend towards digital payments.

- Mobile banking application:



As previously mentioned, a Mobile banking application is a digital tool that allows customers to access all banking services and electronic systems for processing payments, most notably E-SADAD and I-Buraq. The value of transactions executed through banking apps reached $5.6 billion in 2024, compared to approximately $1.5 billion in 2022. This reflects a significant increase in the use of banking apps. Accordingly, digital services offered by banks are witnessing significant growth, driven by the adoption of financial technology as a stable strategy and tool to strengthen the Palestinian financial system amid current uncertainty.

3. BSI and FT indicator:



The banking stability index (BSI) remained relatively stable during 2022 – 2024, with an average value of 0.46, driven by banks' greater hedging, maintenance of strong liquidity and capitalization levels, and compliance with regulatory requirements. Conversely, profitability indicators were affected by these trends and economic pressures, but the overall index remained stable. On the other hand, a positive relation is observed between the use and expansion of financial technology and the stability of the index during the period 2023-2024, which witnessed an acceleration in digital transformation amidst uncertainties and economic and operational pressures on banks. This indicates that banks' use of electronic liquidity helps maintain the stability and soundness of the banking sector, which we will examine in the standard analysis.

V. Empirical Results

In this section, the ARDL model applied through the following steps: First, the data are checked for stationarity to ensure their suitability for analysis using Augmented Dickey Fuller (ADF) test, then a cointegration test is conducted to determine the presence of equilibrium relationships between the variables using bounds test approach, then the short- and long-term relationships between the variables are analyzed, and finally, the model is examined and diagnosed using a set of standard tests to ensure the validity of the results and the accuracy of the estimates.

Stationarity and Order of Integration

The Augmented Dickey-Fuller (ADF) test was used to test for data stationarity, yielding the following integration orders. The table shows that most of the variables (BSI, LFT, GDP, I) are integrated of order I(1) after taking the first difference. At the same time, the credit facilities (LF) are stationary at level I(0), making the ARDL model suitable for integrating variables with different degrees of integration.

TABLE 4: STATIONARITY TEST

Variable	Level Stationary	First Difference Stationary	Order of Integration
Banks' Stability Index (BSI)	Reject	Accept	I(1)
Financial Technology (LFT)	Reject	Accept	I(1)
GDP	Reject	Accept	I(1)
Credit Facilities (LF)	Accept	Accept	I(0)
Interest Rate (I)	Reject	Accept	I(1)
Capital adequacy ratio (CAR)	Reject	Accept	I(1)

Null hypothesis: the series is non-stationary or has a unit root.

Cointegration Test

The bounds test approach developed by Pesaran et al. (2001) is used to test for a long-run relationship among the variables. The null hypothesis assumes no cointegration, and the alternative hypothesis assumes cointegration.

Since the calculated F-statistic (14.13) exceeds the upper bound I(1) at 1% level of significance (5.41), then the null hypothesis of having no levels of long-run relationship is rejected. This implies a long-run equilibrium relationship (cointegration) between the variables under study.

TABLE 5: BOUND TEST

Results of the Bound Test				
	Sample size	**Level of significance**		
		10%	**5%**	**1%**
I(0)	35	2.331	2.804	3.9
I(1)	35	3.417	4.013	5.419
I(0)	40	2.306	2.734	3.657
I(1)	40	3.353	3.92	5.256
F- statistic		**14.13**		

* I(0) and I(1) are respectively the stationary and non-stationary
Null hypothesis: No level relationship

Long-Run Coefficients

Results from the ARDL indicated that Financial Technology (LFT), GDP, and capital adequacy significantly and positively affect banking stability in the long run. At the same time, Loan Facilities (LF) and Interest Rate (I) have a significant adverse effect, indicating that increasing facilities and interest rates may reduce banks' long-term stability. Finance Technology (LFT(-1)): with a coefficient of (0.10) and p-value = 0.000, indicates a positive and statistically significant impact on banking stability at the 1% level. Furthermore, it indicates that increased use of financial technology significantly improves banks' long-term stability; the high t-statistic (4.8) reinforces this effect. The table shows that FinTech has a more substantial positive effect on bank stability than other variables, highlighting the role of technological innovation in enhancing the banking environment and reducing long-term risks.

TABLE 6: LONG RUN RELATIONSHIP

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LFT(-1)	0.102	0.021	4.802	0.000
GDP(-1)	0.003	0.001	3.029	0.011
LF(-1)	-0.487	0.128	-3.807	0.003
CAR	0.051	0.019	2.743	0.018
I(-1)	-0.279	0.060	-4.675	0.001
Constant	3.770	1.294	2.912	0.013
Dependent Variable is Banking Stability Index (BSI), data used during the period 2016Q1 to 2024Q4.				

Short-Run Dynamics

The value of the error correction term (ECT) coefficient reached -0.53, which is statistically significant at the 1% level (p=0.0000), indicating that the speed of correction towards equilibrium in the event of a short-term shock reaches approximately 53% in the subsequent period. This confirms the existence of a long-term relationship between the studied variables and banking stability. The lagged coefficients D(LFT(-1)), D(LFT(-2)), and D(LFT(-3)) were all negative and strongly significant (p=0.0000 and 0.0001), reflecting that the sudden increase in the use of financial technology may put pressure on banks' stability in the short term (perhaps due to the high costs of technological adaptation or the operational risks associated with digital transformation).

TABLE 7: SHORT RUN RELATIONSHIP

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
Cointegrating Equation				
ECT term	**-0.530**	**0.044**	**-12.183**	**0.000**
D(BSI(-1))	-0.470	0.077	-6.107	0.000
D(BSI(-2))	-0.162	0.076	-2.147	0.046
D(BSI(-3))	0.482	0.088	5.463	0.000
D(LFT)	0.011	0.008	1.491	0.153
D(LFT(-1))	-0.148	0.013	-11.702	0.000
D(LFT(-2))	-0.182	0.017	-10.451	0.000
D(LFT(-3))	-0.123	0.015	-8.219	0.000
D(GDP)	0.001	0.000	3.689	0.002
D(GDP(-1))	-0.002	0.000	-4.216	0.001
D(LF)	-0.769	0.204	-3.770	0.001
D(LF(-1))	-2.245	0.257	-8.735	0.000
D(LF(-2))	-2.481	0.279	-8.887	0.000
D(LF(-3))	-0.688	0.180	-3.817	0.001
D(I)	-0.085	0.014	-5.955	0.000
D(I(-1))	0.101	0.017	5.822	0.000
D(I(-2))	0.054	0.013	4.192	0.001
UNC	-0.068	0.007	-9.350	0.000
R-squared	0.935	Mean dependent var		-0.006
Adjusted R-squared	0.873	S.D. dependent var		0.042
S.E. of regression	0.015	Akaike info criterion		-5.270
Sum squared resid	0.004	Schwarz criterion		-4.478
Log likelihood	112.856	Hannan-Quinn criterion.		-4.993
F-statistic	15.212	Durbin-Watson stat		2.492
Prob(F-statistic) = 0.000				
Dependent Variable is Banking Stability Index (BSI), data used during the period 2016Q1 to 2024Q4.				

However, in the long term (as shown in the previous results from the integration equation), financial technology has a positive and supportive effect on banks' stability, contributing to enhanced operational

efficiency, expanding the scope of financial services, and reducing the risks associated with reliance on traditional methods. As for uncertainty (UNC) :A negative and significant coefficient (p=0.0001), confirming that high levels of uncertainty reduce the stability of the banking system.

Diagnostic test:

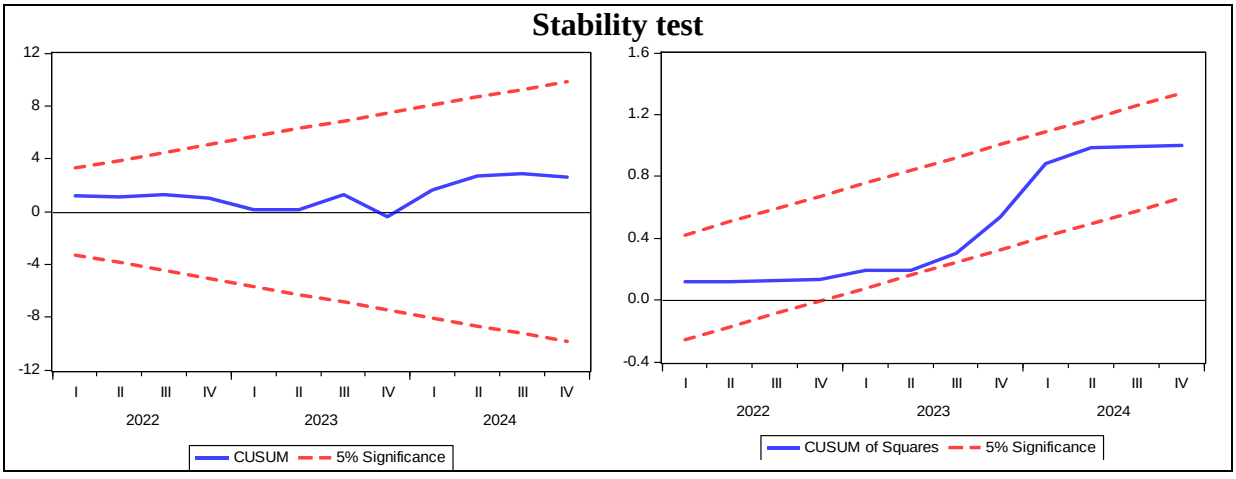
A set of diagnostic tests has been performed to assess the stability of the coefficients and the presence of multicollinearity, serial correlation, and heteroscedasticity. Results indicate that the model has the desired econometric properties: residuals are serially uncorrelated, normally distributed, and homoscedastic. Therefore, the results are binding for expressive explanation.

TABLE 8: DIAGNOSTIC TEST

Test	P-value	interpretation
Breusch-Godfrey Serial Correlation LM Test	0.1822	No serial correlation detected
Breusch-Pagan-Godfrey Heteroskedasticity Test	0.3723	Homoskedasticity confirmed
Jarque-Bera	0.760	Normal distribution

Stability test:

A cumulative sum (CUSUM) of recursive residuals tests is applied to assess the stability and robustness of regression coefficients (Pesaran & Pesaran, 1997). The CUSUM and CUSUMSQ tests at the 5% significance level showed that the model remained stable throughout the study period, with values remaining within critical limits, indicating that the model's coefficients remained stable.



Overall, the results indicated strengthened confidence in the validity of the estimates and conclusions regarding the impact of fintech and other factors on financial stability.

VI. Conclusion

The econometric analysis using the ARDL model demonstrated that financial technology (FinTech) is a positive factor influencing financial stability in Palestine. Its coefficient showed a positive and significant correlation with the Banking Stability Index (BSI). This reflects the ability of digital tools to support operational efficiency and expand financial inclusion, thereby enhancing the resilience of the banking system. Also, results indicate that GDP and capital adequacy significantly enhance banking stability. At the same time, both credit facilities (LF) and interest rates (I) had a negative, significant impact, suggesting that unplanned lending expansion or investment pressures may undermine banking stability in a high-risk environment.

These results are consistent with several international studies, such as Kasri et al. (2022) and Yin et al. (2022), which confirmed the role of FinTech in improving long-term stability. They also intersect with the experience of Mustafa (2014) in Jordan, which demonstrated its positive impact despite short-term pressures. In the Palestinian context, the results highlight that the impact of financial technology is positive, even under challenging circumstances and the current unstable situation. However, it remains conditional on the degree and duration of uncertainty and instability.

The study recommended investing in digital technology and designing digital tools to mitigate the impact of political uncertainty on access to financial services. It also emphasized the need to encourage the adoption of digital financial services across all regions, including remote areas and those affected by difficulties, such as forced closures, under the current situation in Palestine. This should be accompanied by awareness and training programs to promote the safe and effective use of financial technology, thereby mitigating the repercussions of uncertainty.

The study also emphasized the need to monitor and update banks' and the Palestine Monetary Authority's cybersecurity strategies and digital systems, and to ensure the implementation of protection tools aligned with the level of digitization across banks and the banking sector as a whole. Finally, the study recommended adopting and investing in digital financial inclusion, given its high effectiveness in facilitating access to financial services and reducing their cost. It is more appropriate than traditional financial inclusion under the current circumstances in Palestine and enhances the financial system's resilience to risks and disruptions.

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