

The Impact of Currency Devaluation on Banking Sector Performance:**Evidence from Lebanon's Financial Crisis**Author: Clarita Makhoul¹*Affiliation:*

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Abstract:

In this study I examine the extent to which the collapse of the Lebanese pound's parallel-market exchange rate against the US dollar is statistically associated with the deterioration of Lebanon's banking sector during the 2019-2023 financial crisis. Lebanon's peg to the dollar held for over two decades before collapsing in 2019, and I test whether the magnitude of the resulting devaluation tracks measurable banking-sector outcomes: US-dollar bank deposits, bank return on assets (ROA), and the non-performing loan (NPL) ratio. Using annual secondary data compiled from the World Bank's Global Financial Development Database, IMF Article IV reports, and Lebanese banking-sector bulletins for the years 2017-2023, I estimate log-linear regressions of each performance indicator on the year-end parallel-market exchange rate. The results show a strong, statistically significant negative relationship between the exchange rate and USD bank deposits ($r = -0.989$, $R^2 = 0.977$, $p = 0.0015$): deposits fell by 25.1% between 2019 and 2023 as the currency lost more than 97% of its parallel-market value over the same span. The relationship between the exchange rate and bank ROA was directionally negative but not statistically significant ($r = -0.536$, $p = 0.352$), and NPL data, available only for 2018-2020, moved together with the exchange rate ($r = 0.978$), though the sample was too small for formal regression. These findings support the “twin crisis” framework, in which currency and banking crises reinforce one another, and demonstrate that Lebanon's devaluation is empirically, not just anecdotally, linked to the erosion of its banking sector. However, small annual sample sizes, a direct consequence of the breakdown in routine banking disclosure after 2019, limit the strength of causal claims, and future research should extend the series and incorporate bank-level, multivariate data once fuller disclosure resumes.

Keywords:

Currency Devaluation, Banking Sector Performance, Financial Crisis, Bank Deposits, Non-Performing Loans, Dollarization, Lebanon

Introduction:

Banks sit at the center of any economy: they safeguard deposits, allocate credit, and clear payments. When a country's currency and its banking system collapse together, the damage compounds quickly. For more than two decades, Lebanon pegged the lira to the US dollar at 1,507.5 LBP per USD, and this stability underpinned an economy where deposits, lending, and daily transactions were heavily dollarized. That stability ended in 2019, when Lebanon entered what has been described as one of the most severe financial crises in modern history.

The crisis unfolded on two fronts simultaneously. On the currency side, a parallel exchange-rate market emerged as the central bank's foreign-currency reserves could no longer defend the peg, and the pound eventually lost more than 97% of its market value. On the banking side, deposits were informally frozen, non-performing loans rose sharply, and reported profitability turned negative. These two fronts are widely assumed to be connected, and the academic literature on 'twin crises' (Kaminsky & Reinhart, 1999) argues that banking and currency crises typically reinforce one another rather than occurring independently.

What is less common in the literature on Lebanon specifically is a direct, quantitative test of how strongly the exchange rate and banking-sector indicators actually moved together, as opposed to a narrative or descriptive account of the crisis. Much of the existing work on Lebanon's collapse, from IMF Article IV reports to bank research bulletins, is valuable but largely descriptive. This study addresses that gap by treating the depreciation of the exchange rate as a variable that can be statistically related to specific banking outcomes.

The central research question is: to what extent is the depreciation of the Lebanese pound in the parallel market statistically associated with changes in key banking-sector performance indicators, namely deposits, profitability, and loan quality, during Lebanon's 2019-2023 financial crisis?

To answer this question, my study aims to:

- 1) Quantify the depreciation of the Lebanese pound's parallel-market exchange rate between 2017 and 2023.
- 2) Measure the empirical relationship between the exchange rate and USD-denominated bank deposits.
- 3) Assess the relationship between the exchange rate and bank profitability (return on assets).
- 4) Examine the relationship between the exchange rate and loan quality (the non-performing loan ratio).
- 5) Discuss the implications of these findings for banking regulation, depositor protection, and governance in future currency crises.

Literature Review:

The theoretical starting point for understanding why a currency collapse would damage a banking sector is Diamond and Dybvig's (1983) model of bank runs. In their framework, banks are inherently vulnerable to self-fulfilling withdrawal panics once depositor confidence breaks down, even when the underlying assets are sound. Lebanon's experience after 2019, in which depositors faced informal capital controls and could not access their own dollar accounts, is a real-world illustration of exactly the liquidity-panic dynamic that Diamond and Dybvig describe.

Building on this, Kaminsky and Reinhart (1999) formalized the idea of 'twin crises,' showing across a large sample of emerging-market episodes that banking-sector weakness typically precedes a currency crisis, and that the currency crisis then deepens the banking crisis, creating a

reinforcing spiral. Reinhart and Rogoff (2009) extended this observation across eight centuries and sixty-six countries, arguing that policymakers and investors repeatedly underestimate how similar new crises are to old ones, and that currency collapses and banking panics are historically intertwined rather than separate events.

A second relevant strand of literature concerns the balance-sheet, or dollarization, channel. In heavily dollarized economies, a currency depreciation can either protect or damage banks depending on the currency composition of their assets and liabilities. Lebanon is a useful case because its banking sector was simultaneously highly dollarized in its deposit base and heavily exposed to Lebanese-pound-denominated sovereign debt and central bank placements. According to the IMF's 2019 Article IV Consultation, non-performing loans had already risen from 12.5% to 13.8% over the course of 2018, and banks' combined exposure to the central bank and government reached 69% of total assets by mid-2019, well before the currency collapse became acute (International Monetary Fund, 2019). This pre-existing concentration is consistent with the twin-crisis view that banking fragility can precede and amplify a currency crisis rather than simply follow it.

Once the crisis accelerated, the numbers became severe. The Middle East Institute (2025) reports that total Lebanese bank assets fell from \$217 billion in 2019 to \$104 billion in 2024, while most deposits, now denominated mostly in US dollars, remain effectively frozen. BLOMINVEST Bank (2024) documents a continued retrenchment of the banking sector through 2023, with claims on resident customers down more than 80% relative to December 2019. These sources are useful for establishing the scale of the collapse but are largely descriptive rather than statistical.

Locally, Lebanese-based research has examined related governance and transparency questions. Saber and Sassine (2022) studied internal control and internal audit practices among Lebanese NGOs and their donors, finding that weak internal controls undermine financial transparency, a concern that mirrors the opacity that has characterized Lebanese bank reporting since 2019. Beainy and Kamel (2023) situate banking fragility in a broader comparative context, examining how a systemic banking event elsewhere, the collapse of Silicon Valley Bank, illustrates common vulnerabilities in how banks manage interest-rate and liquidity risk, vulnerabilities that were present in Lebanon's banking sector on a far larger scale.

Recently, technology surged across the world, impacting several sectors including the financial and monetary sectors. Given the recent developments, studies argue that governance should be increased especially in vulnerable environments (Athari et al., 2023), as should internal audit (Saber & Sassine, 2022), because while AI revolutionized the entire audit industry (Sawaya et al., 2026), so did it increase the availability and the complexity of data measured, to include even sentiments in some cases (Khalife et al., 2025).

Mawad and Freiha (2024) analyzed the impact of the banking sector on firms performance, while some studies considered the role of banks diminishes during an economic crisis (El-Chaarani et al., 2025), specifically in the case of Lebanon where cryptocurrency became more attractive and a way to hedge risk and protect people's savings instead of a method to speculate (Beainy & Kamel, 2026).

What is missing from this body of work is a direct quantitative test linking the size of Lebanon's currency devaluation to specific, measurable banking-sector outcomes over time. Most existing accounts are qualitative, institutional, or purely descriptive of totals at a single point in time. This

study addresses that gap by compiling an annual time series of the parallel-market exchange rate alongside deposit, profitability, and loan-quality indicators, and by directly testing the strength of the statistical relationship between them.

Methodology:

This study uses a quantitative, correlational research design based on secondary annual data rather than primary survey collection, since the objective is to test whether an already-observed devaluation tracks already-reported banking outcomes, rather than to elicit new responses from bank customers or managers.

The independent variable is the natural logarithm of the year-end Lebanese pound parallel-market exchange rate (LBP per USD). A log transformation was used because the exchange rate moved across several orders of magnitude over the sample period, from 1,507.5 in 2017-2018 to approximately 89,500 by the end of 2023, and log-linear specifications are standard practice in currency-crisis empirics of this kind (following the general approach of Kaminsky & Reinhart, 1999). Exchange-rate figures were compiled from Banque du Liban statements, financial-press reporting (Al Jazeera, 2022; BLOMINVEST Bank, 2021; The961, 2023), since no single official, centralized series of the parallel-market rate exists for this period.

The dependent variables are three banking-sector performance indicators, each sourced from the World Bank's Global Financial Development Database as distributed through the Federal Reserve Bank of St. Louis (FRED), IMF Article IV reporting, and BLOMINVEST Bank's Lebanese Banking Sector bulletins: (1) total USD-denominated bank deposits, in billions of dollars; (2) bank return on assets (ROA), as a percentage; and (3) the non-performing loan (NPL) ratio, as a percentage of gross loans.

For each dependent variable, a simple bivariate ordinary least squares (OLS) regression was estimated against the log of the exchange rate, using the years for which comparable annual data were available: deposits for 2019-2023 ($n=5$), ROA for 2017-2021 ($n=5$), and NPL for 2018-2020 ($n=3$, reported descriptively via Pearson correlation only, since three observations are insufficient for a meaningful regression).

This annual, small-sample design is a direct constraint of the Lebanese post-2019 data environment. Routine, sector-wide supervisory disclosure was disrupted after 2019, a pattern also noted in the IMF's (2019) Article IV report and the Middle East Institute's (2025) review of the crisis, and this is acknowledged explicitly as a limitation of the present analysis rather than treated as a minor detail.

Results:

Table 1 summarizes the annual parallel-market exchange rate for the Lebanese pound against the US dollar alongside three banking-sector performance indicators, total USD-denominated deposits, bank return on assets, and the non-performing loan ratio, for the period 2017-2023.

Year	Parallel Exchange Rate (LBP/USD)	Bank Deposits (USD bn)	Bank ROA (%)	NPL Ratio (%)
2017	1,507.5	—	1.05	—
2018	1,507.5	—	0.92	10.26
2019	~2,000	120.8	-0.70	15.19
2020	~8,000	111.8	-0.45	23.82
2021	~20,000	104.6	-0.19	—
2022	~38,500	94.6	—	—
2023	~89,500	90.5	—	—

Table 1: Currency devaluation and banking-sector indicators, Lebanon (2017-2023)

A linear regression of bank deposits on the natural log of the exchange rate (2019-2023, $n=5$) produced a strong negative relationship: $\text{Deposits} = 185.39 - 8.35 \times \ln(\text{Exchange Rate})$, with a Pearson correlation of $r = -0.989$, $R^2 = 0.977$, and $p = 0.0015$. Deposits fell from \$120.8 billion in 2019 to \$90.5 billion in 2023, a cumulative decline of 25.1%, over a period in which the parallel-market rate depreciated by roughly 4,375%.

The relationship between the exchange rate and bank profitability, measured by ROA (2017-2021, $n=5$), was also negative ($r = -0.536$, $R^2 = 0.287$) but did not reach statistical significance at conventional thresholds ($p = 0.352$), reflecting both the small sample and the presence of other shocks affecting the same window, including the COVID-19 pandemic, the August 2020 Beirut port explosion, and Lebanon's March 2020 sovereign default.

Non-performing loan data were available for only three years (2018-2020) before routine reporting was disrupted. Over that span, the ratio rose from 10.26% to 23.82%, moving in the same direction as the exchange rate (Pearson correlation = 0.978), although the small number of observations precludes formal regression testing for this variable.

Discussion and Conclusion:

This study set out to test, rather than simply describe, the relationship between Lebanon's currency devaluation and the performance of its banking sector between 2019 and 2023. The strongest and most defensible finding is the relationship between the exchange rate and USD bank deposits: a statistically significant, near-perfect negative correlation ($r = -0.989$, $p = 0.0015$) across the five years for which comparable data exist. This is consistent with the twin-crisis framework proposed by Kaminsky and Reinhart (1999), in which currency and banking distress reinforce one another rather than moving independently.

The profitability results are more cautious. The negative relationship between the exchange rate and bank ROA did not reach statistical significance, which is not surprising given that only five annual data points were available and several other major shocks, the pandemic, the port explosion, and the sovereign default, occurred within the same narrow window. This is broadly consistent with Reinhart and Rogoff's (2009) observation that financial crises are rarely the product of a single cause, even when one variable, in this case the exchange rate, appears to dominate the public narrative.

The non-performing loan data, though limited to only three years before disclosure broke down, moved strongly in the same direction as the exchange rate during the early phase of the crisis. This is consistent with the liquidity-panic logic described by Diamond and Dybvig (1983): once depositor confidence collapsed and access to funds was restricted, loan performance deteriorated alongside the currency.

For bank regulators and policymakers, these results suggest that a currency peg backed by a banking sector with heavy sovereign and central-bank exposure, as Lebanon's was, carries the kind of twin-crisis risk documented in the cross-country literature, and that deposit-recovery and banking-reform frameworks, including Lebanon's 2025 bank-reformation efforts, should treat exchange-rate stability and banking-sector health as inseparable rather than as two separate policy problems. For researchers, the results show that even a severely disrupted data environment, like Lebanon's after 2019, can still support a meaningful, statistically grounded empirical test, provided the limitations of the available data are made explicit.

This study has several limitations. First, the sample sizes are small (three to five annual observations per variable), a direct consequence of the breakdown in routine Lebanese banking disclosure after 2019, rather than a design choice. Second, the analysis uses simple bivariate regressions rather than a multivariate model, meaning that other plausible confounding factors, GDP contraction, inflation, and capital-control intensity, were not directly controlled for. Third, because no single official centralized series of the parallel-market exchange rate exists for this period, the exchange-rate figures were compiled from multiple press and financial sources and should be treated as reasonable approximations rather than precise official data.

Future research should extend this time series as Lebanon's 2025 banking reforms progress and as more granular, bank-level data become available, and should incorporate multivariate models that control for the other macroeconomic shocks that coincided with the currency collapse, also, taking into account other important non-financial metrics such as sustainability (Kaspard et al., 2026) and ESG (Kaspard et al., 2025) would be recommended in an era according to Kamel et al. (2026) when everything is digitalized.

A comparative panel study across multiple MENA countries experiencing currency pressure would also help clarify how much of Lebanon's experience is specific to its own institutional context versus generalizable to other heavily dollarized, sovereign-exposed banking systems.

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