Determinants of Lebanon's Financial-Services Output, 2013–2024: Evidence from the National Accounts

November 25, 2026

Contact Information
Mira Said
Senior Research Specialist
mira.said@blom.com.lb

1. Introduction

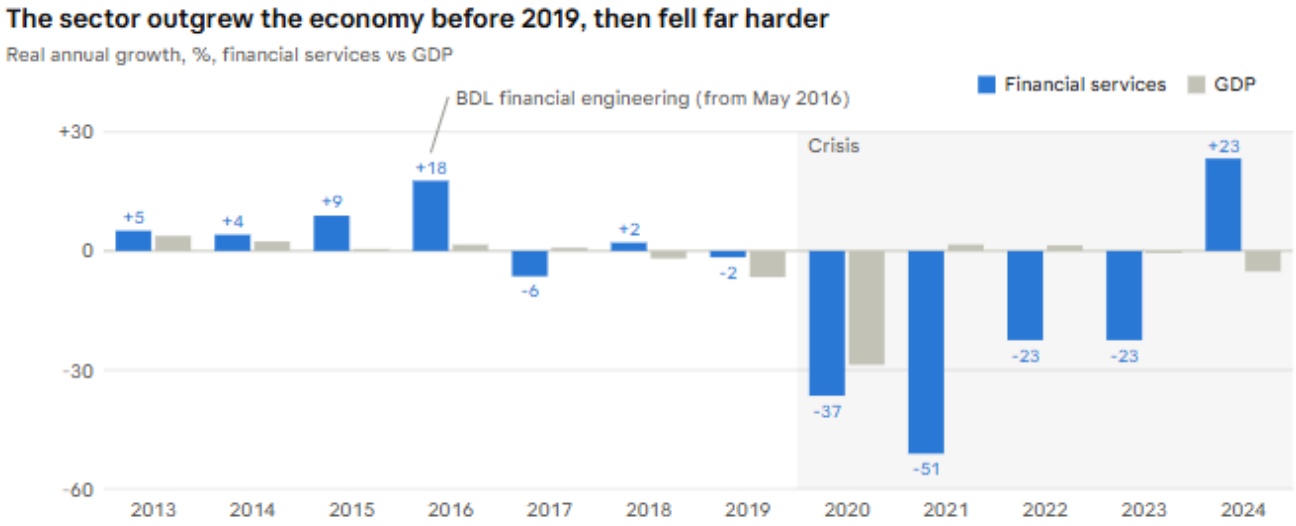
Before 2019, Lebanon's banks were one of the economy's main pillars: they mobilized the savings of residents and the diaspora, financed households and firms, and generated a growing share of national value added.

The sector outgrew the economy. According to the volume indices (2019 = 100) of the Central Administration of Statistics (CAS) national accounts, which measure real change on a rolling annual basis, real financial-services output rose by 34% between 2012 and 2019Q3, while real GDP grew by only 5%. Over the same period, the sector's share of GDP climbed from 7% to 9%.

Financial engineering accelerated that growth, but did not create it. The operations Banque Du Liban (BDL) launched in May 2016 lifted the sector's real output by 18% that year, its strongest year in the sample, before it eased back in 2017. But output had already grown by 19% between 2012 and 2015.

The crisis hit the sector far harder than the economy. As fiscal/monetary/exchange rate pressures mounted in late 2019, confidence weakened, access to deposits was restricted and the lira depreciated sharply. Real financial-services output fell by 37% in 2020, 51% in 2021 and 23% in both 2022 and 2023. By 2023, it stood 83% below its 2019Q3 level, compared with 31.4% for GDP.

Recovery has begun, from a very low base. The banking sector’s output rose by 23% in 2024 while GDP fell by 5%, yet it remained below a quarter of its 2019 level.



Source: CAS, national accounts (volume indices, annual estimates).

This paper asks what drives the sector's output. It uses national-accounts value added, comparable before and after 2019, over 46 quarters (2013Q3–2024Q4). The model, estimated by OLS with Newey-West errors, passes all 27 diagnostic tests and explains about 60% of the variation.

Main findings. A one-point acceleration in credit growth comes with a 2.3-point acceleration in the sector's growth. Capital supports the sector; Lebanon's real effective exchange rate (REER[1]) and GDP growth in the previous quarter weigh on it.

The paper first reviews the literature on the determinants of banking income in Lebanon, then presents the model and its data, reports the results and analyzes them, and concludes with recommendations.

[1] The REER measures a currency's value against a basket of trading partners' currencies, adjusted for inflation differences: REER = NEER × (CPI_Domestic ÷ CPI_Foreign), where NEER is the nominal effective exchange rate. It helps assess whether a currency is overvalued or undervalued. A fall in the REER improves competitiveness, as exports become cheaper abroad, while a rise reduces it.

2. Lebanon's Literature Review

Bank performance is usually explained by bank-specific, industry-specific and macroeconomic factors. For Lebanon, Awdeh (2011) examines the determinants of bank profitability and the effects of foreign ownership over 1996–2007. The paper finds that profitable domestic banks have less capital than their foreign held counterparts, while better capitalization allows foreign banks to engage in riskier businesses who are more profitable. Azar, Bolbol and Mouradian (2016) find that the interest-rate spread, capital-adequacy ratio, cost-to-income ratio and non-interest-income to total assets ratio explain about half of the variation in return on average assets for 39 banks over 2003–2014. Abdel Reda, Rjoub and Abu Alrub (2016) find that banks perform better when their equity to Liabilities are at high levels, which will lead to a higher level of profitability. These studies use bank-level panels covering the pre-crisis peg era. **To our knowledge, there isn't a model that studies the banking sector performance across the 2019 crisis break; this is the gap the present paper seeks to fill.**

3. Model and Data

3.1 The model

Each growth variable enters as the change in its year-on-year (y/y) quarterly growth rate, $\Delta g = g(t) - g(t-1)$ and $g(t) = x(t) \div x(t-4) - 1$, in percentage points. This removes seasonality and makes every series stationary. The estimated equation is:

$$\Delta FS_t = \alpha + \beta_1 \Delta CR_t + \beta_2 \Delta GDP_{t-1} + \beta_3 \Delta REER_{t-1} + \beta_4 \Delta CAP_t + \gamma_1 D(\text{crisis})_t + \gamma_2 D(2023)_t + \gamma_3 D(2024)_t + \gamma_4 I(2023Q1)_t + \varepsilon_t \quad (1)$$

where:

- $\mathbf{\Delta FS_t}$: change in the y/y growth of real financial-services output in quarter t (dependent variable).
- $\mathbf{\Delta CR_t}$: change in the y/y growth of domestic credit to the private sector, in USD, in quarter t.
- $\mathbf{\Delta GDP_{t-1}}$: change in the y/y growth of real GDP, lagged quarter.
- $\mathbf{\Delta REER_{t-1}}$: change in the y/y change of the real effective exchange rate (2016 rebasing fixed), lagged quarter. A positive value is a real appreciation of the lira.
- $\mathbf{\Delta CAP_t}$: change in the y/y growth of commercial banks' capital accounts, in USD, in quarter t.

- **D(crisis)$_t$**: 1 from 2019Q4, when the financial crisis began, and 0 before.
- **D(2023)$_t$ and D(2024)$_t$:** 1 in the four quarters of 2023 and of 2024 respectively, 0 otherwise. They capture the two changes in the official exchange rate: from 1,507.5 to 15,000 lira per dollar in 2023Q1, and to 89,500 in 2024Q1.
- **I(2023Q1)$_t$**: 1 in 2023Q1 only, capturing the impact pf the revaluation at 15,000 lira per dollar[2].
- **α**: constant; **β_1–β_4**: effects of the four drivers; **γ_1–γ_4**: effects of the dummies; **ε_t**: error term.

An interest-rate differential was also tested as a driver, but it was not significant ($p \approx 0.7$) and was dropped[3]. Its removal leaves the other coefficients almost unchanged.

3.2 Data: sources and transformation

Table 1. Data sources

Variable	Source	Frequency	Unit
Financial-services output	CAS	Quarterly	Volume index, 2019 = 100
Real GDP	CAS	Quarterly	Volume index, 2019 = 100
Credit to the private sector	BDL's consolidated balance sheet of commercial banks; BLOM Bank	Monthly	LBP, converted to USD
Capital accounts	BDL's consolidated balance sheet of commercial banks; BLOM Bank	Monthly	LBP, converted to USD
NEER	BLOM Bank	Daily	Index
Lebanese CPI	CAS	Monthly	Index
World CPI	IMF	Monthly	Index

2 Y/y growth of credit and capital stays low through 2023, but its change (Δg) spikes mainly in the quarter of the switch (credit −24 pp, capital −55 pp). A smaller residual follows in 2023Q2 (−12 pp and −10 pp), because the Q1 average still included January at 1,507.5; the model fits that quarter without a dummy (fitted −52 pp vs actual −49 pp). Q3 and Q4 return to near zero. The year dummy cannot absorb a one-quarter spike.

A 2024Q1 dummy was tested to capture the same effect of 2023Q1, however, it was not significant.

3 The interest-rate differential insignificance is interesting, though unusual. Before the crisis, especially from 2015 to 2018, the higher interest rate was earned from financial engineering, though they generated higher profits, these profits were all earmarked to comply by IFRS 9. After the crisis, BDL reduced drastically its interest paid on banks' deposits (down to 0.5%), thus rendering profitability to almost nothing. Hence, the resulting insignificance.

Table 2. Data transformation

Step	What was done	Why
1. Frequency	Monthly and daily series averaged to quarters	Match the quarterly national accounts
2. Currency	LBP balances converted to USD at the BDL official rate of each month: 1,507.5; 15,000 from February 2023; 89,500 from January 2024	Express balances in one currency
3. Rebasing	Pre-2016 NEER multiplied by 0.6468, the average new-to-old ratio over 92 overlapping days (s.d. 0.003)	Remove a false swing of about 38 points from the 2016 base change
4. Real exchange rate	REER y/y change = NEER y/y change + Lebanese CPI inflation − world CPI inflation	Measure the lira's REER
5. Growth	$g = x(t) \div x(t-4) - 1$	Remove seasonality
6. Change in growth	$\Delta g = g(t) - g(t-1)$	Make every series stationary (Section 3.3)
7. Timing	GDP and REER lagged one quarter	Delayed effects; regime shifts

3.3 Diagnostic tests

This model passes all 27 diagnostic tests, covering stationarity, multicollinearity, heteroskedasticity, autocorrelation, normality, functional form, stability, endogeneity and outliers (Appendix, Table A1). Newey-West standard errors are kept as a safeguard.

4. Results

Table 3. Determinants of financial-services output growth

MODEL 12 | sample 2013Q3–2024Q4 | n = 46

	Coef	NW s.e.	z	p	Sig
const	0.0119	0.0149	0.7970	0.4255	
CR	2.3115	0.3086	7.4911	0.0000	***
GDP_l1	-0.3209	0.1178	-2.7229	0.0065	***
REER_l1	-0.2585	0.0611	-4.2326	0.0000	***
CAP	0.6575	0.2632	2.4978	0.0125	**
D_crisis	0.0694	0.0371	1.8681	0.0618	*
D_2023	-0.1200	0.0452	-2.6547	0.0079	***
D_2024	-0.1744	0.0751	-2.3233	0.0202	**
I_2023Q1	0.9097	0.1949	4.6666	0.0000	***

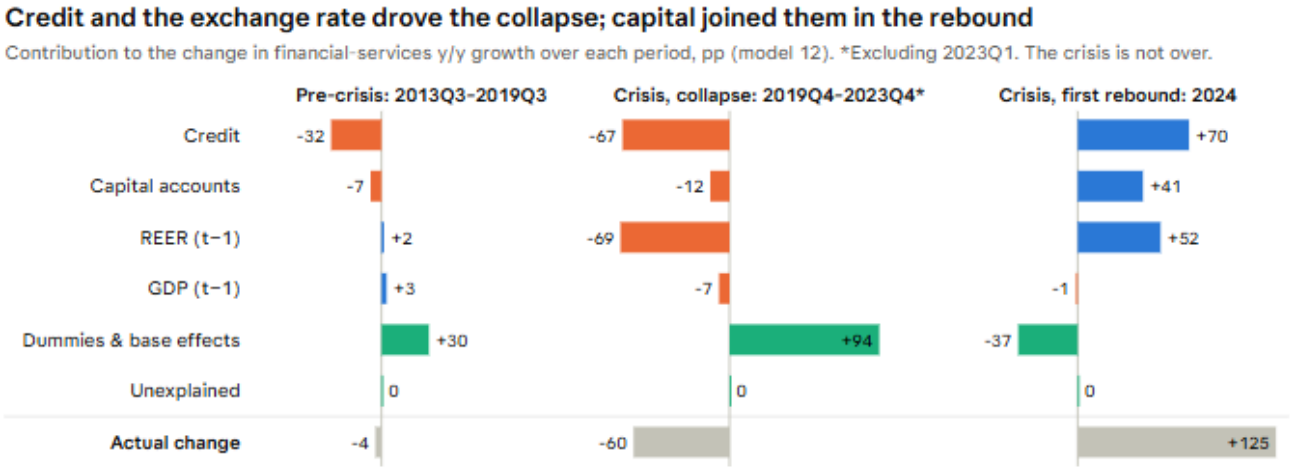
R² 0.6740 | adj R² 0.6035 | F p 0.000000 | AIC -60.71 | BIC -44.26 | DW 2.280

Note: Newey-West: Bartlett kernel, 4 lags. *** p < 0.01, ** p < 0.05, * p < 0.1. **Source:** author's estimates using CAS, BDL, BLOM Bank and IMF data.

What the coefficients mean (Table 3). Each one shows how many points the sector's growth moves when a driver's growth moves by one point.

5. Analysis

The below figure shows how much each driver contributed to the sector's growth in each period. Findings follow.



Source: author's estimates, using CAS, BDL, BLOM Bank and IMF data.

1. **The sector is a credit amplifier.** A 10-point swing in credit growth moves the sector's growth by 23 points. Credit alone accounts for half of everything the model explains. *What it means: the sector rises and falls with lending, more than one-for-one. Restarting credit would be the strongest catalyst for its recovery. It is worth noting that only a couple of banks in Lebanon have started offering loans again in Lebanon.*

2. **A stronger REER is the second-biggest drag.** The REER is the second-largest driver after credit: lagged one quarter, it accounts for 32% of what the model explains. Each 10 pp of REER appreciation costs about 2.6 pp of sector growth a quarter later. Inflation, which enters the REER directly through the CPI ratio, is a key part of this effect: since Lebanese inflation runs above world inflation, this causes a REER appreciation. In the collapse phase (2019Q4–2023Q4, excluding 2023Q1), this effect took 69 pp off growth, as much as credit. *What it means: now that the exchange rate has stabilized, price stability matters for the sector as much as exchange-rate stability.*

3. **Capital matters on its own, not only through loans.** A 10-point swing in the growth of banks' capital accounts moves the sector's growth by about 6.6 points in the same quarter ($p = 0.013$). Capital explains about 15% of what the model captures, third after credit and the exchange rate. It took 7 pp off growth before the crisis and 12 pp in the collapse phase, then added 41 pp in 2024, its largest contribution. *What it means: better-capitalized banks earn more, as in Demirgüç-Kunt & Huizinga, 1999. Because the model already controls for credit, this is an effect on top of lending: rebuilding capital through bank restructuring supports the sector directly.*

4. **The sector decoupled from the economy.** GDP is the weakest of the four drivers: lagged one quarter, it explains only 5.4% of what the model captures. Before 2019, its effect was positive (though not significant), in line with studies that find bank income rises with the business cycle (Athanasoglou et al., 2008; Albertazzi & Gambacorta, 2009). Since 2019, it has turned negative: the sector fell about three times as far as GDP. ***What it means: No growth in GDP can rectify this because economic activity no longer passes through banks. In fact, since the financial crisis erupted, trust in banks eroded, pushing activity into a dollarized cash economy, which the World Bank estimates at almost half of GDP in 2022. Only rebuilding trust and restarting lending can bring that activity back into the banking system.***

5. **Two drivers give a one-quarter warning.** The exchange rate and GDP act with a lag. *What it means: the real exchange rate, inflation and economic performance give an early read on the sector. Limits: the sample is short (46 quarters) and sector-wide, so results are associations, not causal estimates.*

6. **The 2024 rebound was earned, not a bounce.** The sector's growth accelerated by 125 pp in 2024. Credit (+70 pp), the REER (+52 pp) and capital (+41 pp) together added 163 pp, more than the full rebound. Dummies and base effects (−37 pp) and lagged GDP (−1 pp) pulled it back to 125. *What it means: the recovery rests on real improvements, not base effects: banks lending again, a stable exchange rate and stronger capital accounts. Since the three drivers support more growth than was achieved, the recovery has room to go further.*

7. **The crisis, 2023 and 2024 dummies:** from 2019Q4, the crisis dummy adds about 7 pp a quarter to the sector's growth ($p = 0.062$, significant at 10%). After deep falls, growth tends to bounce back from a low base faster than its drivers alone imply. The 2023 and 2024 dummies pull the other way: growth was about 12 pp lower in each quarter of 2023 and 17 pp lower in each quarter of 2024 ($p = 0.008$ and 0.020). These are the years of the move to 15,000 lira per dollar and then to 89,500. In 2024, the crisis and 2024 dummies (the 2023 dummy is zero that year) pulled growth down by 37 pp. *What it means: the dummies measure the cost of the transition itself. Each new exchange rate forced banks to reprice their lira balances and income, and to adjust to new rules on deposits and withdrawals. That disruption weighed on activity. The 2024 drag was larger than 2023's even though the rate was stable for most of the year. This suggests the dummy also picks up other shocks, most likely the war in late 2024. Looking ahead, this drag should fade: with the rate unified, the cost of transition should not recur, letting the strength of the drivers seen in 2024 show more fully. This depends on a stable security situation, since the continuous war with Israel and the possibility of its reescalation could put pressure on the exchange rate and bring the drag back.*

8. **The 2023Q1 impulse dummy:** the fall happened on paper. When the official rate jumped to 15,000 lira per dollar, the lira loans and capital that banks already held were suddenly worth far less in dollars. Without this dummy, that would have cut the sector's growth by 92 pp. Yet the sector's output actually grew, and the impulse dummy (coefficient 0.91, $p < 0.001$) absorbs almost exactly that gap (+91 pp). *What it means: the 2023Q1 drop in credit and capital was an accounting effect of the new rate, not a real loss of banking activity.*

Conclusion

The sector's output is mostly driven by credit: when lending grows by 1 point, the sector's growth picks up by 2.3 points. It is weighed down by real appreciation of the lira. With the lira tied to the dollar through a currency-board regime, real appreciation reflects both a stronger dollar against and Lebanese inflation above world inflation. Based on the 46 quarters studied, these results are associations, not causal effects.

Yet lending, the strongest driver, cannot recover while the crisis remains unresolved. The crisis is systemic and originated at BDL. After talks with the IMF this month, Finance Minister Yassine Jaber said both sides agree on international principles for allocating losses, under which the state and BDL absorb losses first, then commercial banks, with depositors last; *the IMF has, however, typically insisted that bank shareholders absorb losses first*. For banks to honor their share, they must rebuild their revenues, and the order of steps matters. The financial gap law comes first, since banks cannot restructure before they know their share of losses. A bank-by-bank restructuring follows, as each bank's position, losses and potential differ, and then multi-year plans to grow income and repay depositors over time. That sequence has yet to start. Parliament amended the Bank Resolution Law in August 2026, but in October the Constitutional Council annulled its Article 3 over its treatment of the Code of Money and Credit, sending it back to Parliament. The financial gap law, as we all know, is still in the works. The IMF considers both laws essential to restore financial stability, maximize deposit recovery and restructure the public debt.

To unlock the drivers identified here, the following steps should be followed. First, completing both laws would end the legal uncertainty that has frozen the sector. Banks could restructure, and depositors would recover most of their funds over time. As trust in banks gradually returns, deposits would flow back into the system and fund new lending, the strongest driver identified in this paper. Second, rebuilding bank capital within that framework would move banks from survival mode back to active lending, financing households, businesses and the projects that drive growth. None of this can take hold without a stable environment: a lasting end to the war with Israel and the state's exclusive authority over security and national decisions are preconditions for any economic reform to deliver.

Before the crisis, banks were among the main engines of the Lebanese economy. The repercussions of the financial crisis cannot be undone, but losses can still be limited. Accountability should take its course, with each party bearing its fair share; yet the recovery of depositors, investors, firms and households alike rests on one plan: rebuilding a banking sector that was once among the region's strongest, so that it can repay depositors, gather confidence, and once again power an economy that depends on it.

Appendix

Table A1. Diagnostic tests

DIAGNOSTIC TESTS (5% level)

Test	Statistic	p-value	Result
ADF – FS	-5.3970	0.0000	PASS
KPSS – FS	0.1909	0.1000	PASS
ADF – CR	-5.6651	0.0000	PASS
KPSS – CR	0.0661	0.1000	PASS
ADF – GDP_l1	-4.5824	0.0001	PASS
KPSS – GDP_l1	0.0387	0.1000	PASS
ADF – REER_l1	-3.7251	0.0038	PASS
KPSS – REER_l1	0.1310	0.1000	PASS
ADF – CAP	-4.8375	0.0000	PASS
KPSS – CAP	0.0741	0.1000	PASS
Max VIF	5.7982	NaN	PASS
Breusch-Pagan	9.5885	0.2951	PASS
White (special form)	0.9302	0.6281	PASS
ARCH(4)	1.4933	0.8278	PASS
Breusch-Godfrey(4)	3.2400	0.5185	PASS
Ljung-Box Q(4)	2.6703	0.6144	PASS
Ljung-Box Q(8)	10.4304	0.2361	PASS
Durbin-Watson	2.2798	NaN	PASS
Jarque-Bera	2.5003	0.2865	PASS
Skewness	0.4726	NaN	PASS
Kurtosis	3.6412	NaN	PASS
Ramsey RESET	0.0031	0.9969	PASS
CUSUM (OLS residuals)	0.5034	0.9617	PASS
Chow 2019Q4	1.2281	0.3162	PASS
Hausman – CR exogenous	0.5283	0.5973	PASS
Hausman – CAP exogenous	0.7514	0.4524	PASS
Max Cook's D (2020Q1)	0.1936	NaN	PASS

27/27 tests passed

For your Queries:
BLOM Bank s.a.l.
Research Department
Zaituna Bay
POBOX 11-1540 Riad El Soloh
Beirut 1107 2080 Lebanon

Mira Said
mira.said@blom.com.lb

Research Department
Tel: +961 1 991 784
research@blom.com.lb

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