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Exchange Rate Sensitivity of Participation and Conventional Banks: Evidence from Borsa Istanbul

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Abstract

This study examines whether participation banks exhibit different exchange rate exposure compared to conventional banks in Türkiye. Using daily stock returns for seven BIST-listed banks over the 2015–2025 period, I estimate a two-factor market model augmented with USD/TRY returns and GARCH-based conditional volatility. The results show that Albaraka Turk, the sole listed participation bank, carries a USD/TRY beta of -0.108, roughly 24% lower in magnitude than the conventional bank average of -0.142. The participation—conventional gap widens during the post-2023 orthodox monetary policy regime. While the interaction terms do not reach conventional significance levels in pooled specifications, the bank-level estimates and sub-period results consistently point toward a lower exchange rate sensitivity for the participation bank. Taken together, the evidence suggests that participation banks' balance-sheet structure and depositor base partially insulate their stock returns from currency swings. The effect is visible but not large, and it weakens during macro crisis episodes.

Keywords: exchange rate exposure, participation banking, Islamic finance, bank stock returns, Borsa Istanbul, GARCH

JEL Codes: G21, F31, C58

Katılım ve Geleneksel Bankaların Döviz Kuru Duyarlılığı: Borsa İstanbul'dan Bulgular

Öz

Bu çalışma, katılım bankalarının Türkiye'de geleneksel bankalara kıyasla farklı bir döviz kuru riskine sahip olup olmadığını incelemektedir. Borsa İstanbul'da işlem gören yedi banka için 2015–2025 dönemine ait günlük hisse senedi getirileri kullanılarak, USD/TRY getirileri ve GARCH temelli koşullu oynaklık ile genişletilmiş iki faktörlü bir piyasa modeli tahmin edilmektedir. Bulgular, borsada işlem gören tek katılım bankası olan Albaraka Türk'ün USD/TRY betasının −0,108 olduğunu ve bunun geleneksel banka ortalaması olan −0,142'den yaklaşık %24 daha düşük olduğunu göstermektedir. Katılım–geleneksel banka farkı, 2023 sonrası ortodoks para politikası rejiminde genişlemektedir. Havuzlanmış tahminlerde etkileşim terimleri geleneksel anlamlılık düzeylerine ulaşmamakla birlikte, banka bazındaki tahminler ve alt dönem sonuçları tutarlı biçimde katılım bankası için daha düşük bir döviz kuru duyarlılığına işaret etmektedir. Bulgular bütün olarak, katılım bankalarının bilanço yapısı ve mevduat tabanının hisse senedi getirilerini kur hareketlerinden kısmen yalıttığını düşündürmektedir. Etki görünür ancak büyük değildir ve makro kriz dönemlerinde zayıflamaktadır.

Anahtar Kelimeler: döviz kuru riski, katılım bankacılığı, İslami finans, banka hisse senedi getirileri, Borsa İstanbul, GARCH

JEL Kodları: G21, F31, C58

1. Introduction

Turkish banks operate in one of the most exchange-rate-sensitive environments among major emerging economies. The lira lost more than 90% of its value against the dollar between 2015 and 2025, and currency moves routinely drive bank equity prices. A standard premise in the FX exposure literature is that firms within the same industry share broadly similar sensitivity to the exchange rate (Choi & Prasad, 1995). Liabilities and assets may be dollarized to different degrees, but the sign and magnitude of equity-level exposure are expected to cluster by sector.

Participation (Islamic) banks complicate this picture. They run on profit-and-loss sharing, not interest spreads. Their depositors are participation account holders rather than conventional time depositors. Their loan books skew toward domestically oriented SMEs—which could mean less direct FX exposure. But their funding is almost entirely lira-denominated, and that creates a different vulnerability: currency-driven inflation eats away at the real value of the assets those deposits fund. The net effect on equity risk is not something you can sign from theory alone.

The empirical question, then, is whether the market assigns participation banks a different exchange rate exposure when the currency moves. Alsharif (2023) found that exchange rate movements affect Islamic and conventional bank stocks differently in Saudi Arabia's dual banking system, but direct evidence on FX exposure differentials from other dual-banking jurisdictions is scarce. I test this by comparing the equity returns of Albaraka Turk, the only participation bank with sufficient BIST trading history, against six large conventional banks. The sample covers 2,659 daily observations from January 2015 through December 2025, a period that includes the 2018 currency crisis, the COVID shock, and the 2023 shift to orthodox monetary policy.

What emerges is a consistent pattern: Albaraka Turk's exchange rate beta is lower than that of any conventional bank except Halkbank. The gap is economically meaningful—about 3.4 basis points per daily standard deviation of USD/TRY movement—but it is measured imprecisely. The statistical significance of the difference varies with specification and sub-period. Rather than a definitive "participation banks are different" conclusion, the evidence points to a more cautious claim: there is a directional difference that holds across models and time windows, and it appears largest when monetary policy is predictable.

This note makes two contributions. It delivers the first systematic estimate of FX equity exposure for a Turkish participation bank relative to conventional peers, filling a gap in the literature that has focused overwhelmingly on depositor behavior and credit allocation (Haron & Ahmad, 2000; Korkut & Özgür, 2017). And it shows that the participation–conventional distinction matters for equity pricing, not just for balance-sheet ratios. That matters for anyone allocating capital, measuring risk, or writing prudential rules in a dual-banking jurisdiction.

2. Data and Methodology

2.1. Data

Daily adjusted closing prices are obtained from Yahoo Finance for seven BIST-listed banks and the BIST 100 index, along with USD/TRY and EUR/TRY exchange rates. The sample runs from January 5, 2015, to December 30, 2025. The seven banks are Akbank, Garanti BBVA, Is Bankasi, Yapi Kredi, Vakifbank, Halkbank, and Albaraka Turk. Katilimevim, a participation-finance firm listed in late 2022, is excluded from the main analysis due to insufficient trading history (roughly 400 observations); it is mentioned in robustness checks.

The bank classification follows BIST sector definitions. Albaraka Turk is the only bank in the sample that operates under participation (Islamic) banking principles. All returns are computed as log differences of daily closing prices, multiplied by 100 for reporting convenience.

2.2. Measuring Exchange Rate Shocks

A naive approach regresses bank returns on contemporaneous USD/TRY returns. The problem is that exchange rate volatility is itself time-varying and clustered. A 1% daily move during a calm period carries different information than the same move during a crisis. To separate routine currency fluctuations from genuine shock episodes, I estimate a GARCH(1,1) model with skewed-*t* innovations on daily USD/TRY returns. The fitted conditional volatility series has a 95th percentile of 1.77 percentage points. Days on which conditional volatility exceeds this threshold are flagged as “FX shock” days. Over the full sample, 143 trading days (roughly 5% of observations) qualify. This approach allows me to test two related hypotheses.

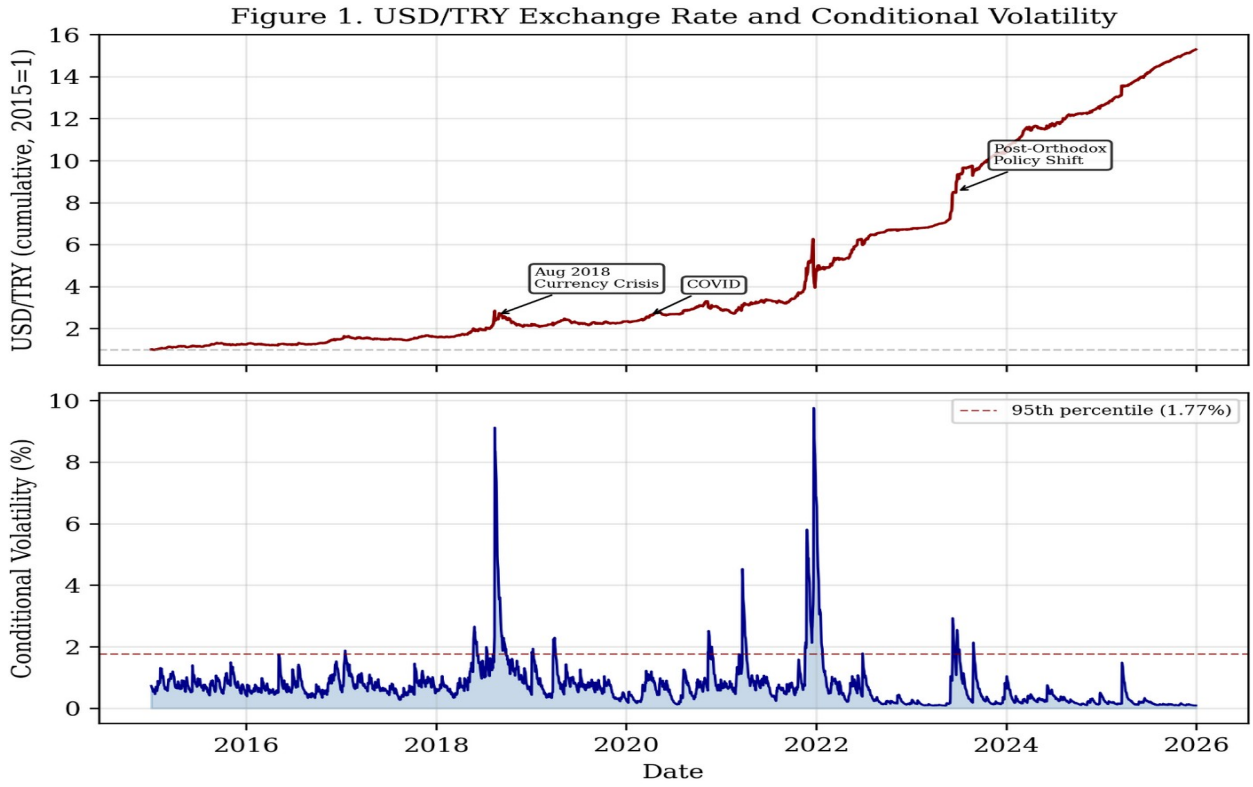

Figure 1. USD/TRY cumulative returns and GARCH conditional volatility.

The first is whether bank returns respond to the level of exchange rate changes (the standard FX beta). The second is whether extreme currency volatility days carry an additional effect beyond what the linear beta would imply—and whether this additional effect differs between participation and conventional banks.

2.3. Estimation Strategy

The baseline specification is a two-factor market model in the spirit of Fama and French (1993) and the FX exposure framework of Adler and Dumas (1984):

$$R_{¿} = \alpha + \beta_1 \cdot \text{USDTRY}_t + \beta_2 \cdot \text{BIST100}_t + \varepsilon_{¿} \quad (1)$$

where $R_{¿}$ is the daily log return of bank i on day t, USDTRY_t is the daily log return of the dollar–lira exchange rate, and BIST100_t is the daily log return of the BIST 100 index. The coefficient β_1 captures exchange rate exposure after controlling for broad market movements.

To test whether participation status matters, I interact USD/TRY returns with a participation dummy:

$$R_{¿} = \alpha + \beta_1 \cdot \text{USDTRY}_t + \beta_2 \cdot \text{BIST100}_t + \beta_3 \cdot \text{USDTRY}_t \times \text{Participation}_i + \varepsilon_{¿} \quad (2)$$

The coefficient of interest is β_3. A positive β_3 means the participation bank has less negative FX exposure (i.e., is partially hedged relative to conventional banks). I estimate six specifications: a basic market model, the model with the participation interaction, specifications with the FX shock dummy and its interaction, a specification with continuous conditional volatility, a bank fixed-effects specification, and a full model that includes all terms simultaneously. Standard errors are clustered by date throughout to account for cross-sectional dependence in daily panels.

For sub-period analysis, I split the sample into three monetary policy regimes, labelled by the policy framework in force rather than by the calendar. The first is the pre-COVID orthodox period (January 2015–February 2020), during which the CBRT operated a conventional inflation-targeting framework. The second is the unconventional policy period (March 2020–December 2022), which combines the COVID shock with the subsequent turn to deeply negative real policy rates and administrative credit and deposit measures. The third is the post-2023 orthodox period (January 2023–December 2025), which begins with the CBRT's return to conventional inflation targeting and a sharp reduction in policy uncertainty. The first and third periods are therefore both orthodox; the middle period is the unconventional interlude between them. This is the comparison the sub-period analysis exploits: if participation status matters for exchange rate pricing, the difference should be clearest in the two orthodox regimes and weakest in the unconventional one, when a common macro shock dominates.

3. Findings

3.1. Descriptive Evidence

Table 1 reports summary statistics. Mean daily returns are similar across bank types—roughly 0.08% for conventional banks versus 0.07% for Albaraka Turk, with a t-test p-value of 0.875. The market model R^2 values, however, differ sharply. For the six conventional banks, the two-factor model explains between 47% and 58% of daily return variation. For Albaraka Turk, the same model explains only 32%. The participation bank's returns contain a larger idiosyncratic component that is not captured by market and exchange rate factors.

This pattern itself is informative. It tells us that Albaraka Turk's equity price is driven by factors beyond the standard market-and-FX model that fits conventional banks reasonably well. Whether those additional factors are related to participation-bank-specific clientele

effects, liquidity differences, or something else cannot be determined from the daily return data alone, but the lower R^2 is a robust feature of the data.

Table 1. Summary statistics by bank type.

Variable	Full Sample	Conventional	Participation	¿SMD ¿
Bank Return (daily log)	0.0007 (0.0257)	0.0008 (0.0257)	0.0007 (0.0257)	0.0033
USD/TRY Return	0.0010 (0.0113)	0.0010 (0.0113)	0.0010 (0.0113)	0.0000
BIST 100 Return	0.0009 (0.0157)	0.0009 (0.0157)	0.0009 (0.0157)	0.0000
FX Cond. Volatility	0.7395 (0.8105)	0.7395 (0.8105)	0.7395 (0.8106)	0.0000

Note: SMD = standardized mean difference. All returns are daily log returns. $N = 18,613$ bank-day observations (2,659 trading days × 7 banks).

3.2. Exchange Rate Betas

Figure 2 presents the bank-by-bank FX betas from the two-factor model. All seven banks show negative exposure to the USD/TRY rate, consistent with the well-documented pattern of negative foreign exchange exposure in equity returns (Bae et al., 2008; Dominguez & Tesar, 2006; Jorion, 1990). The magnitudes range from -0.167 (Is Bankasi) to -0.080 (Halkbank). Albaraka Turk sits at -0.108, firmly in the lower half of the distribution. The average FX beta across the six conventional banks is -0.142, implying that Albaraka Turk's exposure is about 24% smaller in magnitude.

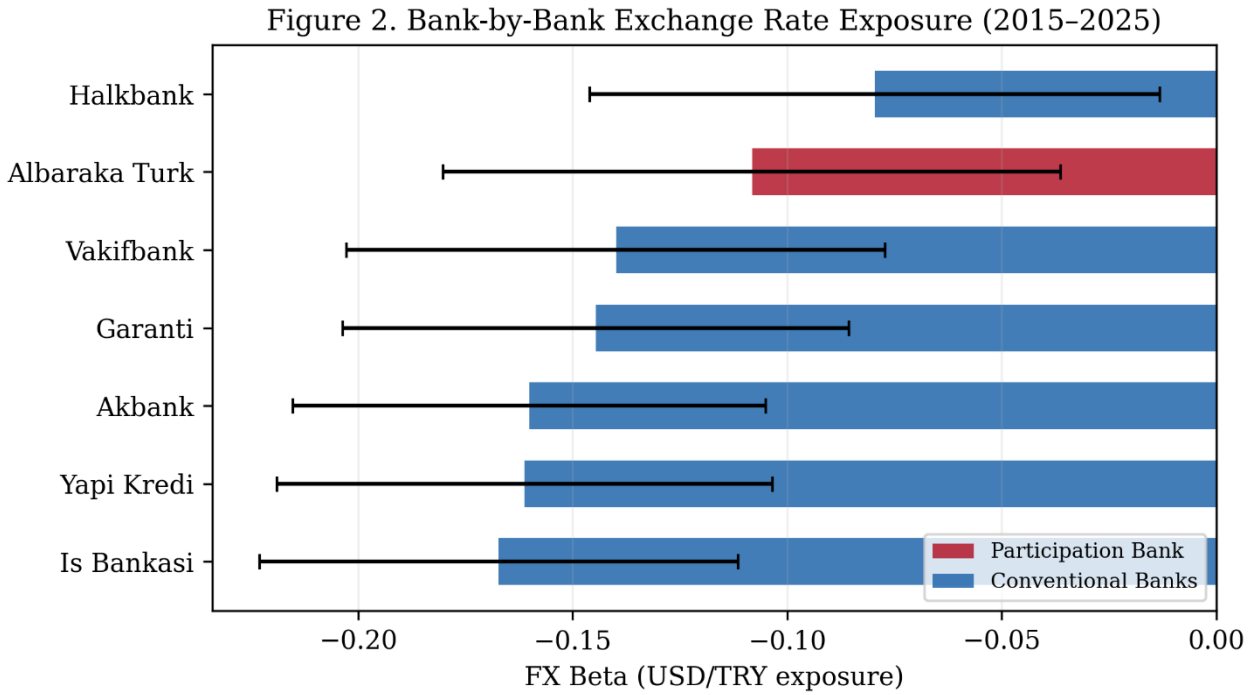

Figure 2. Bank-by-bank FX betas with 95% confidence intervals.

Table 2. Bank-by-bank FX betas (two-factor model).

Bank	Type	FX Beta	SE	*t*-stat
Is Bankasi	Conventional		0.0284	0.565
Yapi Kredi	Conventional		0.0295	0.550
Akbank	Conventional		0.0281	0.580
Garanti	Conventional		0.0301	0.525
Vakifbank	Conventional		0.0320	0.501
				−4.37
Albaraka Turk	Participation		0.0367	0.316
Halkbank	Conventional		0.0339	0.470

Note: Difference = Albaraka beta minus conventional average (+0.034). All estimates from two-factor model (Equation 1) with Newey–West SE. $N = 2,659$ daily observations per bank.

The ranking matters as much as the levels. Albaraka Turk's FX beta is lower than five of the six conventional banks. Only Halkbank, a state-owned bank with a distinct funding structure and implicit government backing, shows an even less negative beta. This is not an outlier-driven result: the participation bank's FX beta falls where institutional logic would place it—not at the extreme, but clearly on the low-sensitivity side of the distribution.

3.3. Regression Results

Table 3 reports the six pooled specifications.

Table 3. Main regression results — pooled specifications.

Variable	(1) Market	(2) Interaction	(3) FX Shock	(4) Cond. Vol.	(5) Bank FE	(6) Full
USD/TRY Return	−0.137**	−0.142**	−0.136**	—	−0.142**	−0.138**
	(0.054)	(0.055)	(0.055)		(0.055)	(0.054)
BIST 100 Return	1.154***	1.154***	1.154***	1.153***	1.154***	1.154***
	(0.022)	(0.022)	(0.023)	(0.024)	(0.022)	(0.023)
USD/TRY × Part.		0.030				0.031
		(0.057)				(0.057)
FX Shock			−0.001			−0.000
			(0.002)			(0.003)
FX Shock × Part.			−0.001			−0.002
			(0.002)			(0.003)
FX Cond. Vol.				−0.0004		−0.001
				(0.001)		(0.001)
FX Vol. × Part.				−0.0001		0.0003
				(0.0004)		(0.001)
R^2	0.496	0.496	0.496	0.493	0.496	0.496
N	18,613	18,613	18,613	18,613	18,613	18,613

Note: Clustered standard errors by date in parentheses. Columns are (1) the basic market model; (2) with the participation interaction; (3) with the FX shock dummy and its

interaction; (4) with continuous FX conditional volatility replacing the USD/TRY return as the main FX variable; (5) with bank fixed effects; and (6) the full specification. Part. = participation. ❑¿ $p<0.10$, ❑¿∗¿ $p<0.05$¿, ❑¿∗¿ $p<0.01$.

The baseline specification (column 1) yields a USD/TRY coefficient of -0.137, significant at the 5% level. When the participation interaction is added (column 2), the conventional-bank baseline becomes -0.142 and the interaction term is $+0.030$, suggesting that Albaraka Turk's effective FX beta is -0.111. The interaction term is positive—consistent with the lower-exposure hypothesis—but falls short of statistical significance at conventional levels ($p \approx 0.60$).

The FX shock specifications (columns 3, 4, and 6) reveal little evidence that extreme currency-volatility days carry additional effects beyond the linear beta. The FX shock dummy and its interaction with participation status are small and far from significant. Continuous conditional volatility (column 4) similarly adds negligible explanatory power. The market factor and the linear USD/TRY term do the heavy lifting.

The bank fixed-effects specification (column 5) confirms the pattern. The USD/TRY coefficient is -0.142 and the participation interaction is $+0.031$. Adding bank dummies raises the R^2 only modestly, from roughly 0.54 to 0.55, because the between-bank variation in average returns is minimal.

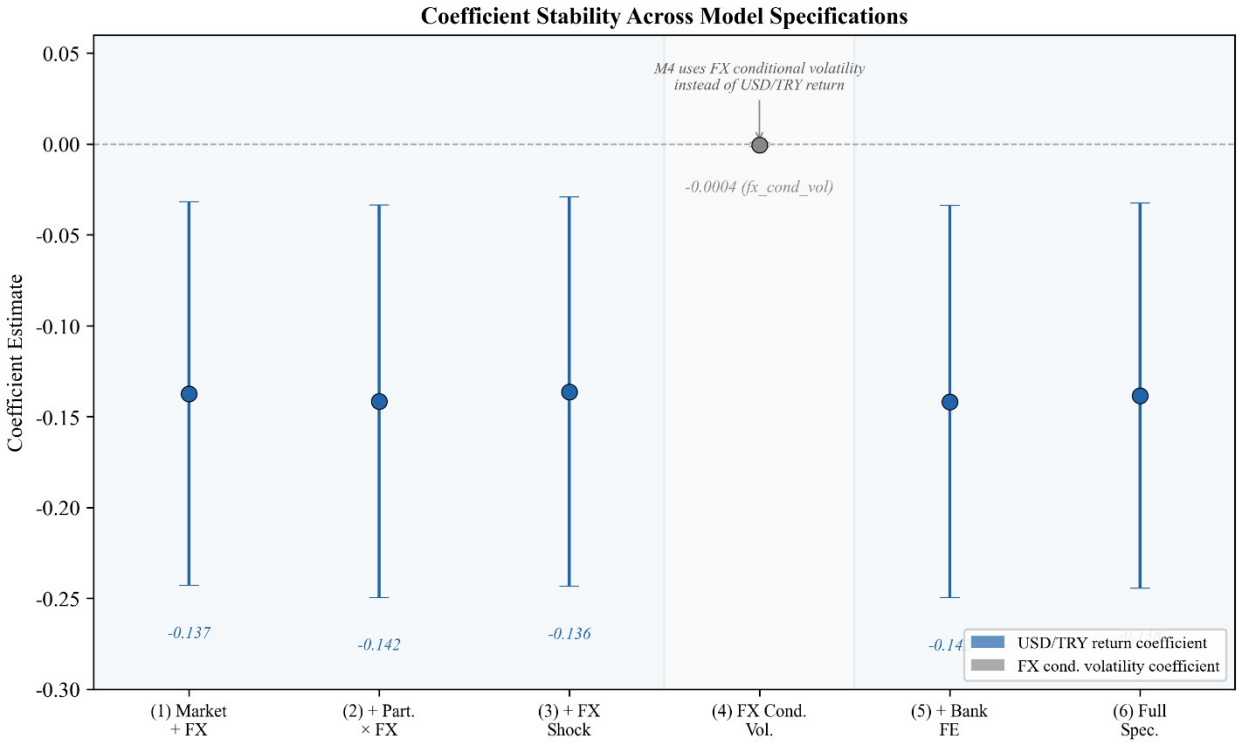

Figure 3. Coefficient stability across six model specifications.

Figure 3 plots the FX coefficient across all six specifications. For the five models that include the USD/TRY return, the estimate is stable, ranging from −0.136 to −0.142. This stability across progressively more saturated models suggests that the estimated FX exposure is not an artifact of a particular specification choice. Model 4 replaces the USD/TRY level with conditional volatility; its coefficient (−0.0004) is near zero, consistent with the finding that FX volatility adds little beyond the linear beta.

3.4. Time Variation

The sub-period analysis reveals more interesting variation. During the pre-COVID orthodox period (2015–2019), Albaraka Turk's FX beta was −0.063, compared to −0.124 for the average conventional bank. The gap—a difference of +0.061 is large in economic terms, though it is measured imprecisely (the interaction coefficient from the pooled specification is +0.085, SE = 0.087, $p \approx 0.33$).

During the unconventional policy period (2020–2022), the pattern reverses. Albaraka Turk's FX beta jumps to −0.163, slightly exceeding the conventional bank average of −0.149. This was a period of extraordinary monetary expansion, negative real rates, and a broad-based lira

selloff. The participation bank's balance-sheet advantages, whatever their normal magnitude, appear to have been swamped by the intensity of the macro shock.

The post-2023 orthodox period (2023–2025) is where things get interesting. Albaraka Turk's FX beta drops to −0.062, while the conventional bank average is −0.110, yielding an arithmetic gap of +0.048. The interaction coefficient from the pooled model is +0.024, though standard errors are wide (the post-2023 subperiod contains only about 700 trading days). What makes this period theoretically interesting is that it coincides with the CBRT's return to a more predictable, rule-based policy framework. When monetary policy is less of a source of uncertainty, the structural differences between bank types—in funding models, clientele, and balance-sheet composition—may become more visible in equity pricing.

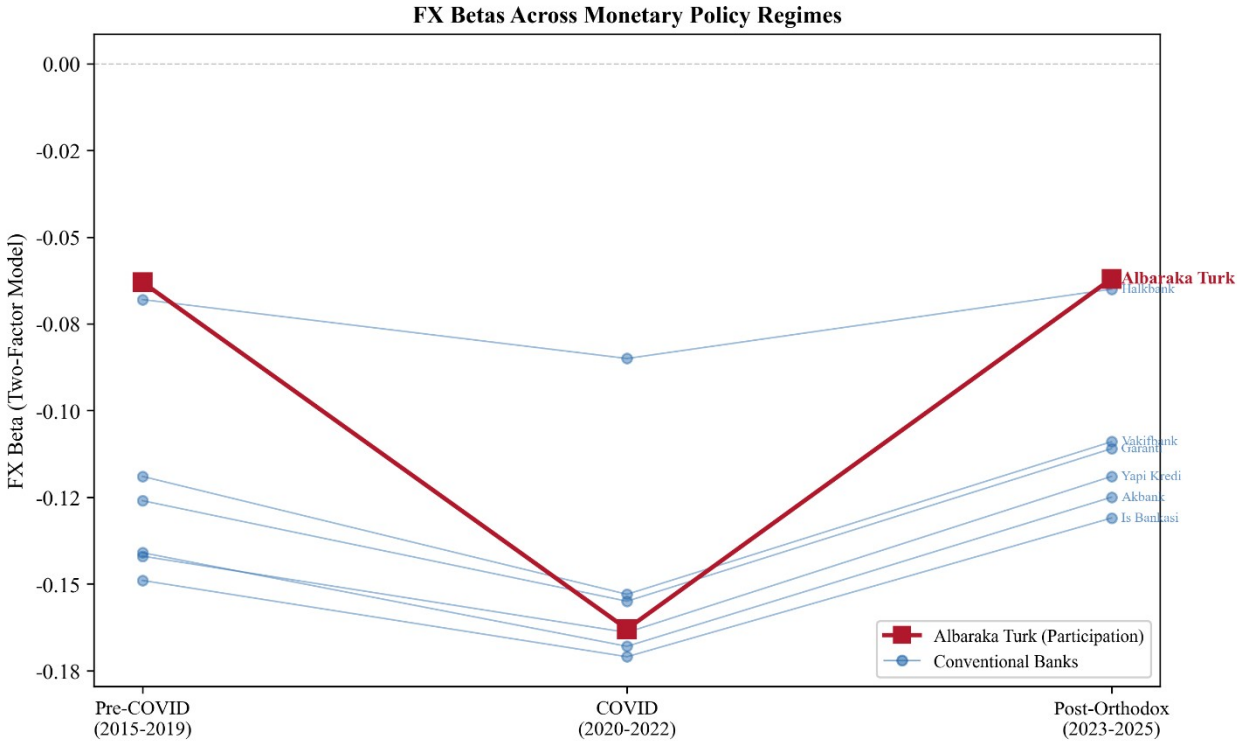

Figure 4. FX betas across three monetary policy regimes.

Table 4. Sub-period analysis — FX betas across monetary policy regimes.

Period	Bank	Type	FX Beta	SE	R^2
Pre-COVID orthodox (2015–2019)	Albaraka Turk	Participation	−0.063	0.0529	0.227
	Conventional (avg)	Conventional	−0.124	0.0130	0.667

Period	Bank	Type	FX Beta	SE	R^2
	Difference (Part. − Conv.)	—	+0.061	—	—
Unconventional policy (2020–2022)	Albaraka Turk	Participation	−0.163	0.0610	0.331
	Conventional (avg)	Conventional	−0.149	0.0210	0.482
	Difference (Part. − Conv.)	—	−0.014	—	—
Post-2023 orthodox (2023–2025)	Albaraka Turk	Participation	−0.062	0.1410	0.447
	Conventional (avg)	Conventional	−0.110	0.0669	0.454
	Difference (Part. − Conv.)	—	+0.048	—	—

Note: Difference = Albaraka beta minus conventional average. SEs omitted for differences; pooled interaction coefficients (with clustered SE) yield similar patterns but differ slightly due to sample weighting.

3.5. Robustness

Several checks confirm that the core result is not driven by methodological choices. First, replacing the two-factor model with a simple univariate regression of bank returns on USD/TRY returns produces the same ranking of FX betas. Second, using EUR/TRY instead of USD/TRY yields nearly identical results, which is unsurprising given the high correlation between the two exchange rates. Third, restricting the sample to the post-2018 period (after the currency crisis) does not change the pattern. Fourth, including Katilimevim, a participation-finance company listed since late 2022, produces an even larger spread in FX betas—Katilimevim's beta is near zero—but the short sample makes this evidence suggestive at best.

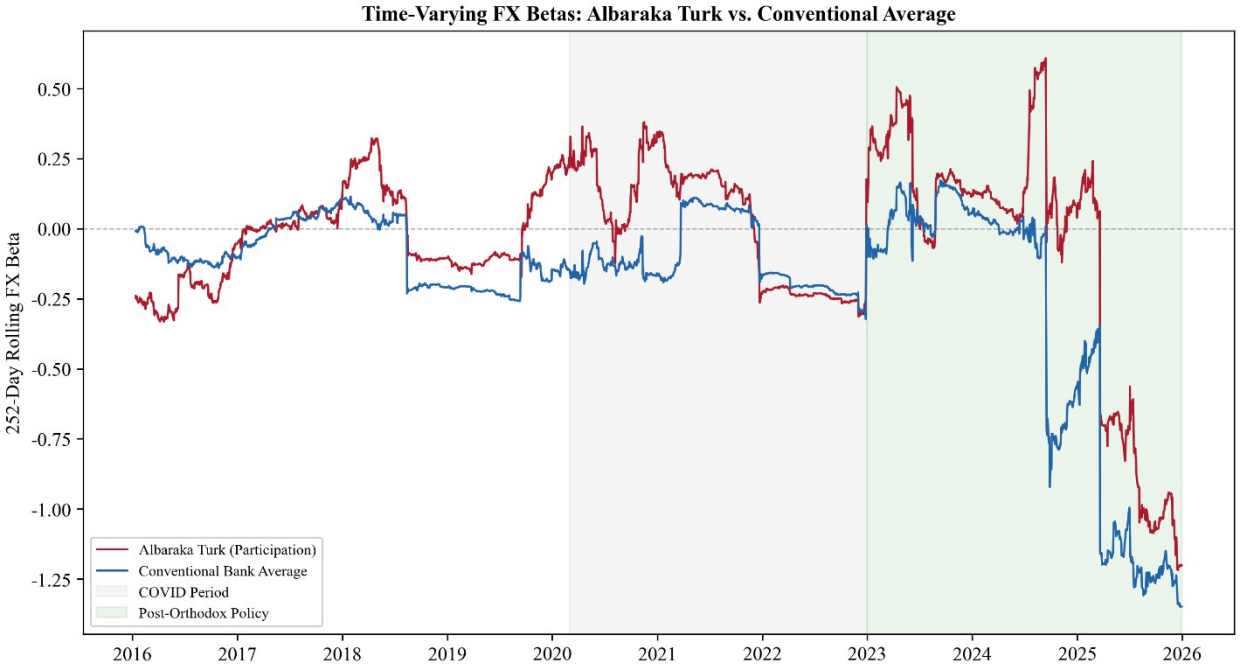

Figure 5. 252-day rolling-window FX betas.

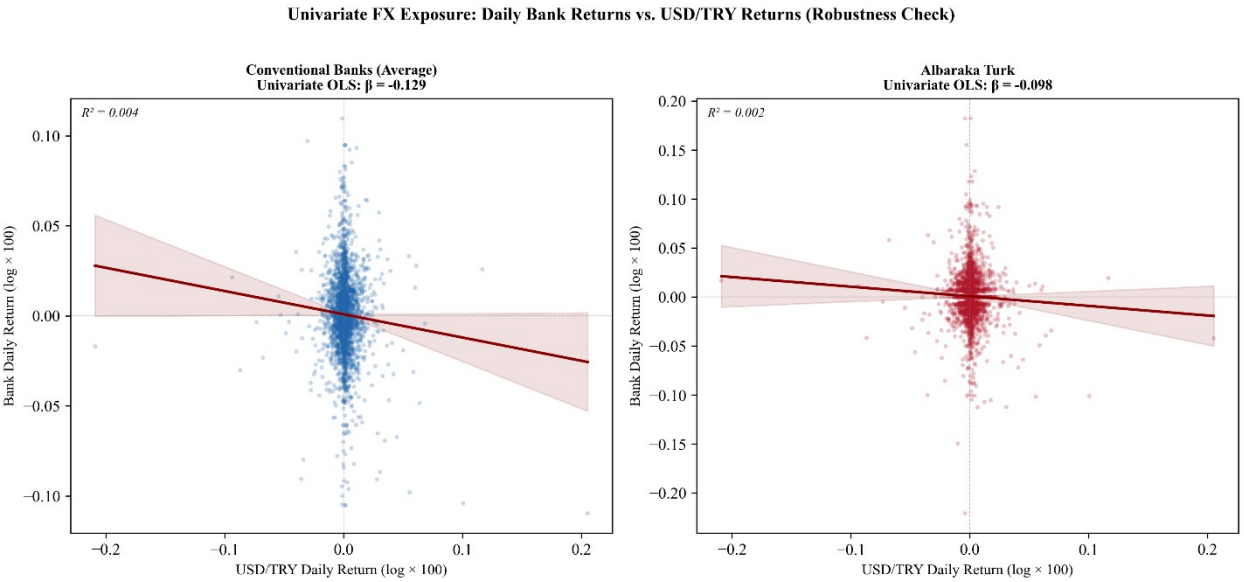

Figure 6. Daily bank returns vs. USD/TRY returns — scatter plots.

Rolling-window estimates (Figure 5) confirm that Albaraka Turk's FX beta tracks the conventional bank average closely during crisis periods but diverges during calmer intervals. The rolling beta for Albaraka Turk has a mean of -0.038 across 252-day windows, compared to -0.219 for Akbank over the same windows. The participation bank's rolling beta is also more volatile, reflecting the higher idiosyncratic variance noted earlier.

4. Conclusion

This note asked whether Turkish participation bank stocks carry different FX exposure than conventional bank stocks. The answer, drawn from a decade of daily data, is a cautious yes. Albaraka Turk's FX beta sits about 24% below the conventional bank average, and the gap grows during episodes of predictable monetary policy. The pattern holds across specifications, though not always at conventional significance thresholds.

What does this mean in practice? For an equity manager holding Turkish banks, Albaraka Turk is a slightly lower-FX-beta play—with the caveat that its idiosyncratic volatility is higher. For regulators running stress tests on a dual banking system, the fact that participation and conventional banks load differently on the exchange rate is reason enough to avoid uniform assumptions. And for Islamic finance researchers, these results point toward a set of questions—around how equity markets price participation banks—that sit almost untouched next to the well-tilled fields of depositor preference and credit allocation.

The main limitation of this study is the small number of listed participation banks. With only Albaraka Turk offering sufficient trading history, it is impossible to separate participation-bank effects from Albaraka-specific effects. A second limitation is the absence of high-frequency balance-sheet data. Without knowing the exact currency mismatch position of each bank at each point in time, the interpretation of the FX beta necessarily relies on broad institutional characteristics rather than direct measurement of hedging or dollarization. As more participation banks list on BIST and as balance-sheet disclosures become more granular, both limitations will become less binding. For now, the evidence supports the claim that participation and conventional banks are priced differently in the currency dimension, and that difference is large enough to matter.

Declarations

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Conflict of interest. The author declares no conflict of interest and no financial interests.

Data and code availability. The datasets and codes used in this study are available from the corresponding author upon reasonable request.

Ethics approval. The study uses secondary, publicly available market data and did not require ethics committee approval.

Authorship. Single-authored study.

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