



The Impact of Geopolitical Risk on Policy Mix: Evidence from a Panel of Tunisian Banks using Panel VAR and Local Projection models

**13th Conference BCC: « Challenges from Higher Uncertainty »
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Outline:

1. Problem statement

2. Methodology

3. Results

Problem statement

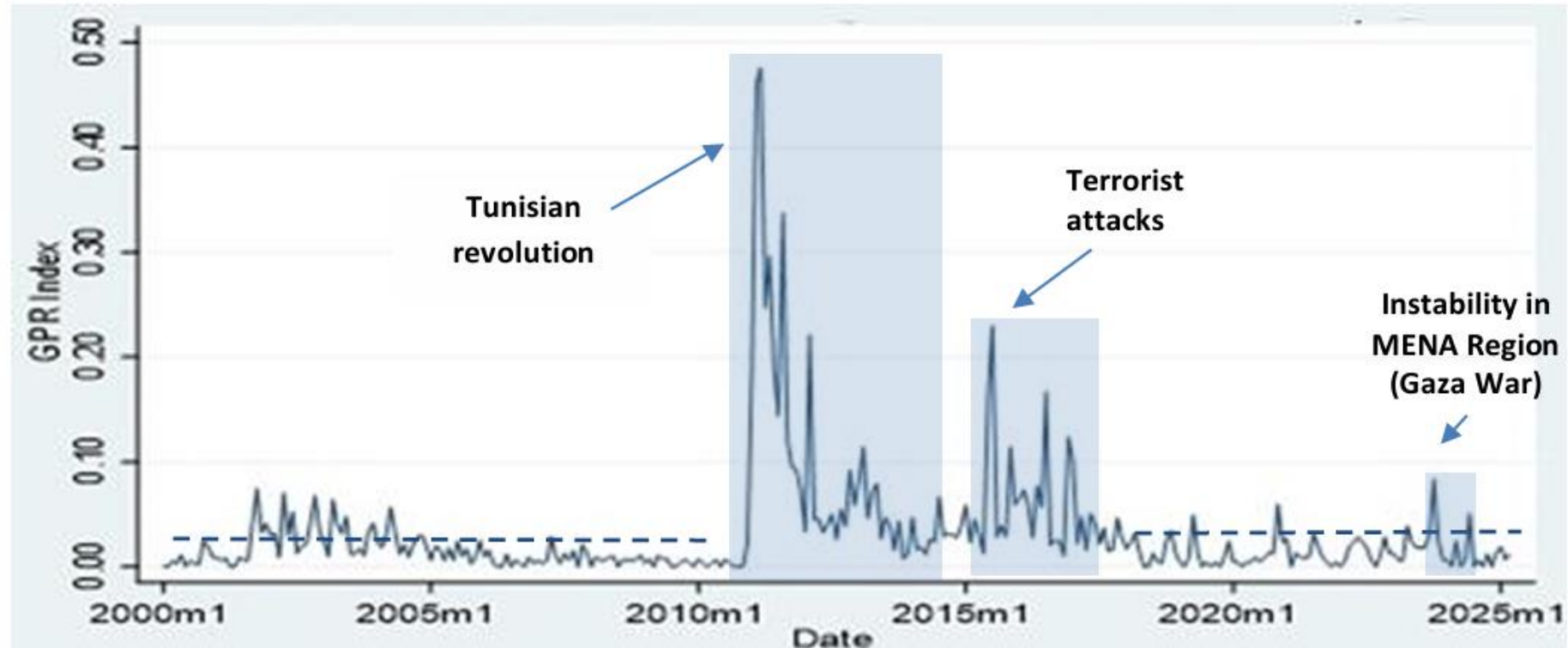
Main challenges

- **World economy** has been increasingly influenced by geopolitical considerations (Ukraine, Middle East, China-US, etc.),
- **Geopolitical risk shocks** affect the economy through different channels,
- **In the financial sector, the Geopolitical Risks** refer to disruptions stemming from political, social, or economic tensions within or between countries, with the potential to undermine **financial market stability and economic performance**,
- Recent research suggests that geopolitical shocks tend to undermine financial stability,
- **How do geopolitical risk shocks impact monetary and macroprudential policies?**

Problem statement

Tunisia Geopolitical Risk

Figure 1 : Tunisia GPR index



Problem statement

Literature Review

- **Kang and Ratti (2013) and Arouri, Estay, Rault, and Roubaud (2016)** document a negative association between uncertainty and equity returns, while **Antonakakis, Chatziantoniou, and Filis (2013)** show that the magnitude of this effect varies across sectors and countries. These findings suggest that uncertainty propagates through multiple channels, including expectations, credit spreads, and risk premiums.
- **Caldara and Iacoviello (2022)** introduce a news based GPR index and show that geopolitical tensions are associated with declines in industrial production, international trade, and asset prices. Their results further suggest that the effects of geopolitical shocks may originate from both the supply and demand side of the economy.
- **Nguyen and Thuy (2023)** show that increased GPR raises borrowing costs and tightens credit standards in the U.S. loan market.

Problem statement

Motivation

This study aims to address this research gap by providing a detailed analysis of **how geopolitical risk interacts with key monetary and financial variables in Tunisia** by employing a **dual-method approach**.

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Methodology

Data

- To consider the **global impact of geopolitical risk**, we use a rich data set of financial indicators for 22 banks of Tunisia economy and macroeconomic variables. We used quarterly data that covers the period from **2011Q1 to December 2024 (1,144 observations)**. The data are summarized in **Table 1**.

Table 1. Summary of information of Variables

Variable	Symbol	Source	Description
Return on Assets	ROA	CBT	Banks-specific
Return on Equity	ROE	CBT	Banks-specific
Capital Adequacy Ratio	CAR	CBT	Banks-specific
Tier1 Capital	Tier 1	CBT	Banks-specific
Loans to customers	Credit	CBT	Banks-specific
Non Performing Loans	NPLS	CBT	Banks-specific
Real GDP	RGDP	INS	Macroeconomic indicator
Policy rate	Policy_rate	CBT	Interest rate
Real effective Exchange Rate	REER	CBT	Exchange rate
Geopolitical Risk	GPR	Matteo Iacoviello's website	Country-specific index
Inflation	Inflation	INS	CPI: all items

Methodology

Modeling approaches

The analysis uses a **(Panel VAR)** model, which assess the impact of the Geopolitical shocks on monetary and macroprudential policy transmission over time. In addition, we use a **Local Projection panel** data model approach which provides a robust framework to examine how Tunisia's policy toolkit performs in an environment of fluctuating and persistent geopolitical uncertainty.

Methodology

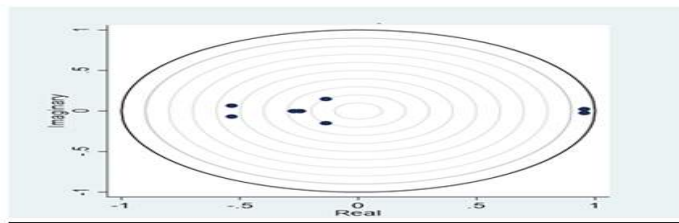
1- Panel VAR Specification:

We start our empirical investigation with a Panel-VAR, for which the reduced form of the **PVAR** model is defined as:

$$Y_{i,t} = \theta_i + \gamma(L)Y_{i,t-1} + \varepsilon_{it} \quad (1)$$

Where i ($i=1 \dots N$) denotes banks and ($t=1, \dots T$) the time. $Y_{i,t}$ is the vector of endogenous stationary variables, $\gamma(L)$ represents the matrix of polynomial in the lag operator L , θ_i denotes the vector of banks fixed effects and ε_{it} is the error term. We used the GMM procedure. **The PVAR satisfies the stability condition** as shown in figure 2 (all roots are inside the unit circle).

Figure 2: Roots of the companion matrix



Methodology

2- Local Projection :

Due to the limited transmission of geopolitical risk through the interest rate channel, we intend to explore the credit and macroprudential channels by using the local projection in a panel of 22 banks. **In the linear specification**, we estimate a **credit supply equation** augmented with geopolitical risks for the bank i at time t as follows:

$$Credits_{i,t+h} = \alpha_0 + \alpha_i + \beta_h S_{i,t-k} + \sum_{j=1}^k v_j' X_{i,t-j} + \varepsilon_{i,t+h} \quad (2)$$

Where α_0 is constant term, α_i are bank's fixed effects to control for unobserved cross-bank heterogeneity, and $S_{i,t-k}$ is a one-unit shock to GPR. The vector $X_{i,t-j}$ of control variables.

Outline:

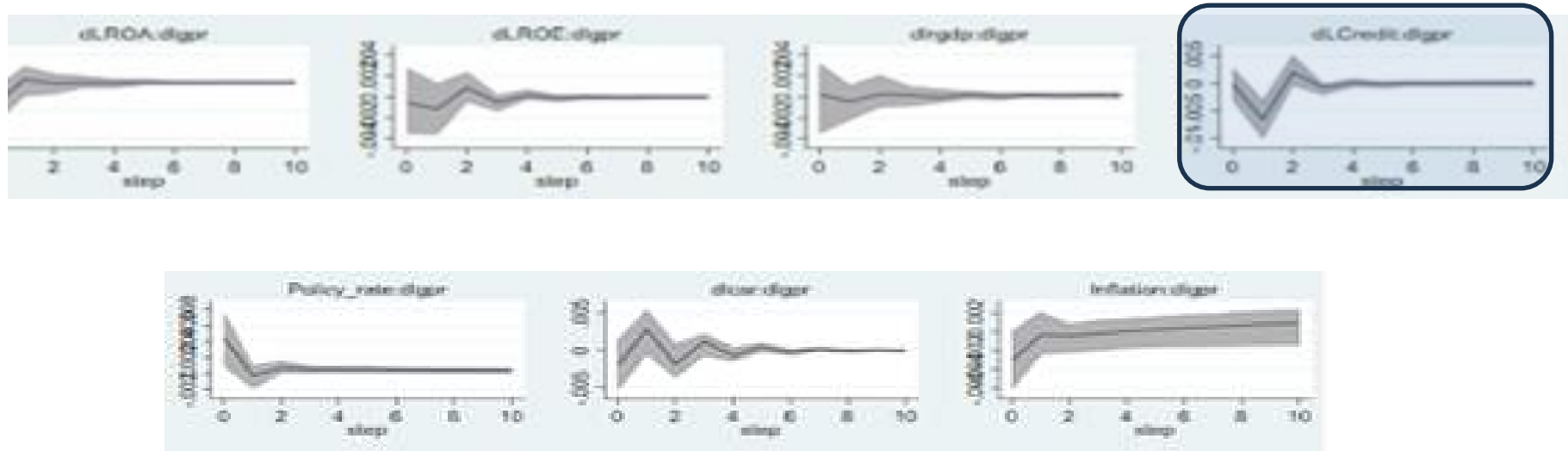
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Results

1- Panel VAR :

IRF's

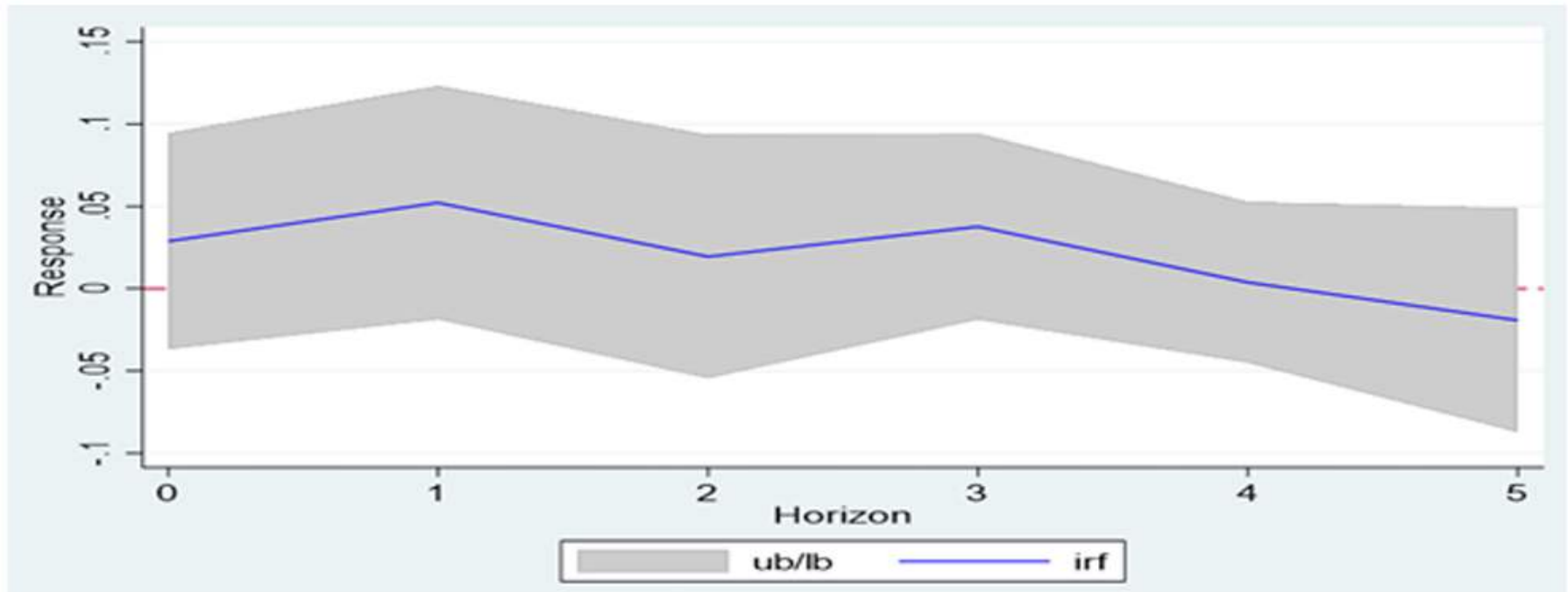
the transmission of geopolitical risk through the credit channel is particularly noteworthy. The IRFs demonstrate a decline in credit growth (dCredit) following a GPR shock, consistent with a risk-averse adjustment in lending behavior by banks. This contraction may stem from increased uncertainty, tighter regulatory oversight, or a deterioration in borrower creditworthiness.



Results

2- Local Projection :

Figure 4. The impulse response of Credit to a GPR shock

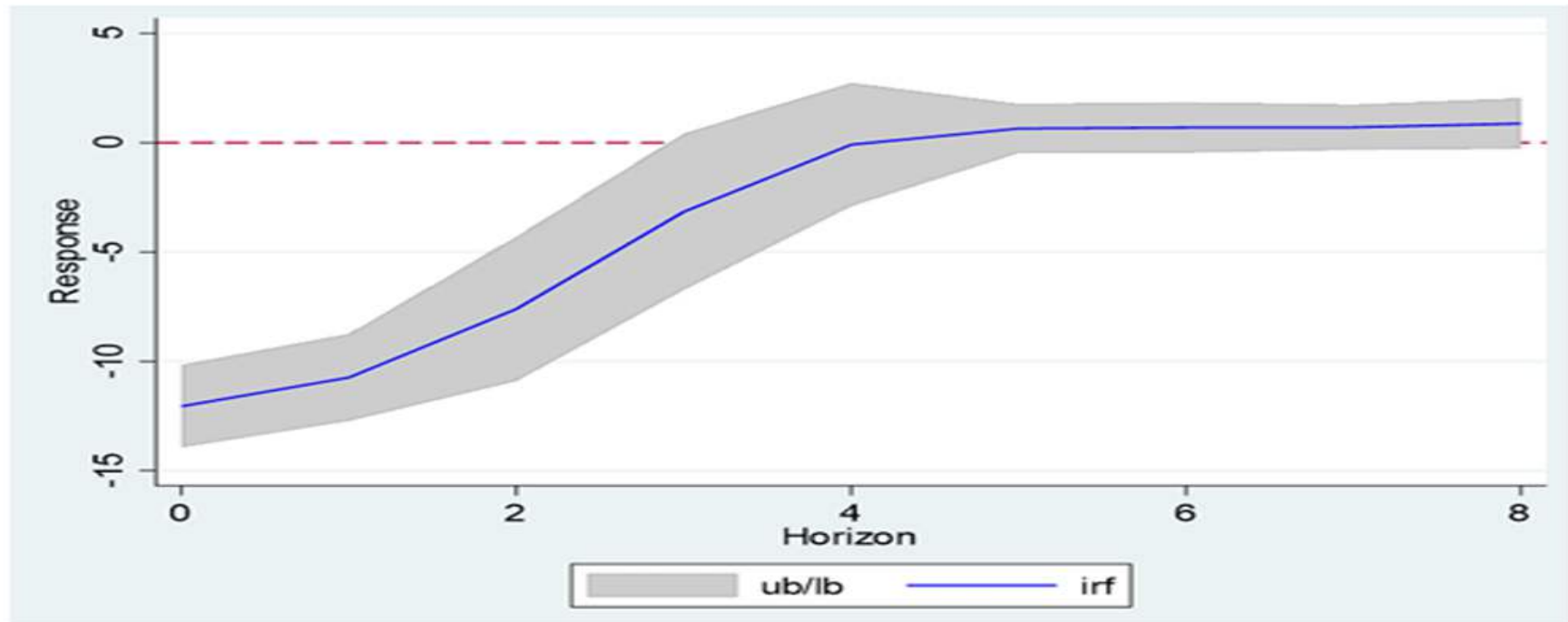


Notes: the shock is a unit shock to GPR. SE are bootstrapped (200 replications) and clusterized at the Bank level.

Results

2- Local Projection :

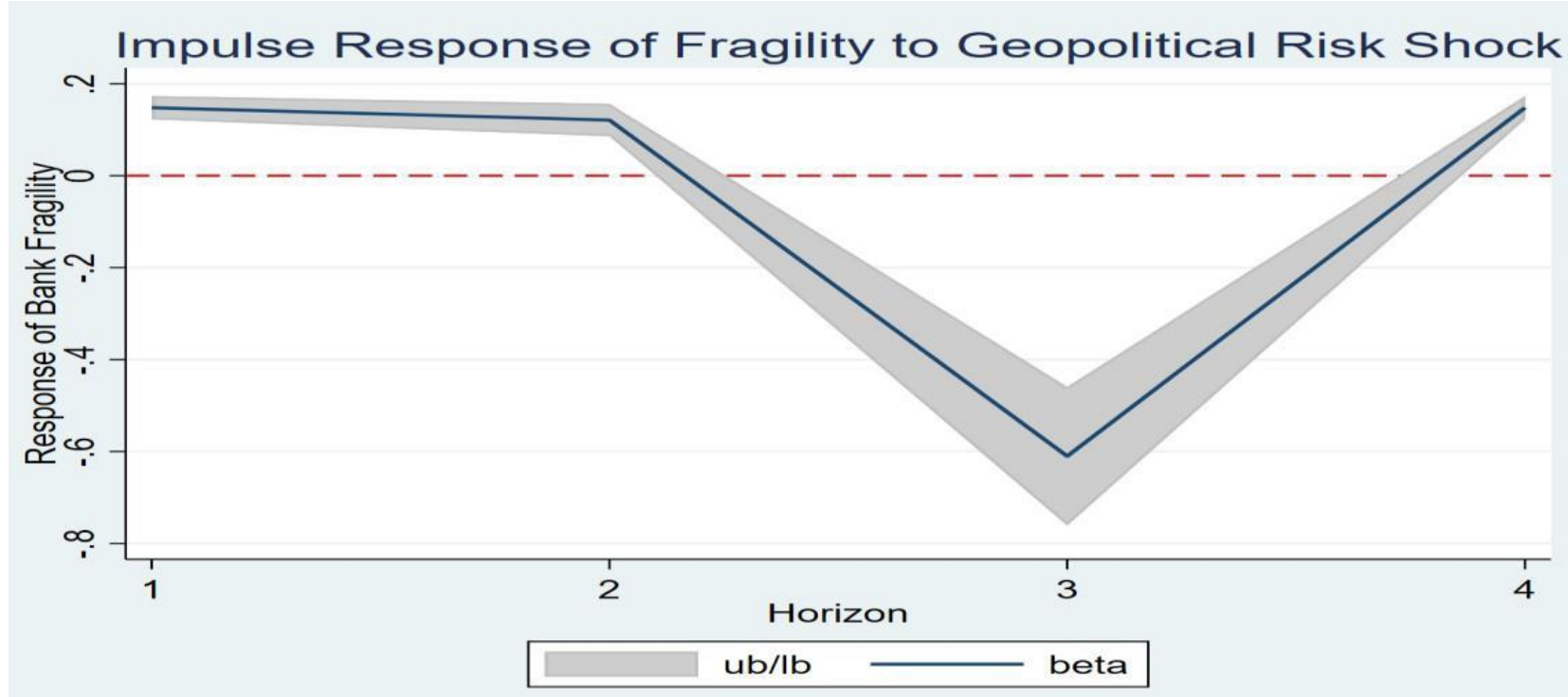
Figure 5. IRF of ROE to GPR shock



Results

2- Local Projection :

FIGURE 6. GPR ON $(-ZSCORE(FULL\ SAMPLE))$



FINAL THOUGHTS

KEY TAKEAWAYS

- *The panel LP model* highlights a delayed yet persistent contraction in credit supply and a sharp initial **drop in return on equity (ROE)**, both of which point to heightened risk aversion and a deterioration in market sentiment
- These findings confirm the **relevance of the credit transmission channel** in amplifying the real effects of geopolitical uncertainty and raise concerns about the vulnerability of financial intermediation in times of crisis.
- This research provides novel evidence **for Tunisia**, demonstrating that while monetary policy aims to boost the economy during shocks, macroprudential regulation offers a flexible and effective tool to mitigate systemic risk.



**THANK YOU
FOR YOUR
ATTENTION**

