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The CARR-volatility connectedness between USD/TRY and foreign banks in Turkey: Evidence by TVP-VAR

This study focuses on the volatility spillover between the stock prices of foreign banks having business in Turkey and the exchange rate. More particularly, it analyzes the connectedness between the USD-TRY exchange rate volatility and the foreign banks' stock price volatility in their own country's stock markets. We select ten foreign banks with the biggest total assets and divide them into two panels: eastern and western capitalized banks. The dataset contains weekly data from 2016-01-04 to 2022-01-17. We estimate volatilities utilizing the Conditional Autoregressive Range (CARR) model and then apply the Time-Varying Parameter-Vector Autoregressive (TVP-VAR) based Diebold–Yilmaz Connectedness Index to reveal the transition and connectedness of volatility. The total connectedness indices show that 26.72 and 54.75% of the forecast error variance originate from other assets included in the spillover analysis for eastern and western panels, respectively. We also explore net pairwise co-movements and find that shocks in USD-TRY have dominated on the forecast error variance of bank stocks in the eastern panel, while it is a net volatility receiver in the western panel.

Keywords: Diebold–Yilmaz Connectedness Index; dynamic connectedness; CARR; TVP-VAR.

JEL classification: C11; C53; C58; F31; G15.

1. Introduction

Stock markets are often a critical indicator of the financial and economic market and trends in stock prices can be considered a sign of economic contraction or growth. The returns and risks of other financial instruments and the monetary policy decisions affect the risk of stock markets. Although stock markets and exchange rates offer alternative investment opportunities to investors, the return and risk relationship between the two markets has a dynamic structure. Banks act as a bridge between these two markets and the relationship between the stock returns of banks and the change in exchange rates may create a complex structure. Merton's Intertemporal Capital Asset Pricing Model (1973) and French et al.'s (1983) Nominal Contract Hypothesis are approaches based on the relationship between bank stock returns and interest/exchange rate changes. Today, the developments in econometric approaches provide better implications for explaining this relationship. Before moving on to these approaches, it is useful to examine the elements underlying the theory of Kasman et al.'s (2011) study. They explain that the nominal assets and nominal liabilities held by a bank affect stock returns through wealth distribution effects caused

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