Research on volatility connectedness in global foreign exchange markets based on LASSO-VAR models

Abstract

Foreign exchange markets work 24 hours on business days and react sensitively to changes in financial environments. Global financial integration and advances in the dissemination and process of information decreased the cost of market operation, while increasing the chance of risk contagion in global forex markets. The research on volatility connectedness in global forex markets can help market participants identify red flags for possible losses and have their portfolio risk decentralized in a timely manner and provide useful insights for policy makers.

Under this background, LASSO-VAR models are constructed to measure static and dynamic volatility connectedness using exchange rates of 42 currencies from 4 January 1999 to 15 February 2019. According to static analysis on full sample, directional volatility connectedness is mostly driven by forex turnover, trade relations, and exchange rate systems. Besides, the network of global forex markets volatility connectedness has a strong geographic component, meaning higher connectedness in country neighborhoods. As currencies with higher trading volumes(e.g. USD, EUR and RMB) occupy central positions in the network, so does Jordan Dinar, a minor currency pegged to a single US dollar. In the light of the network of inter-regional connectedness, north America and Oceania are transmitters of volatility, while Latin America and Africa are receivers of volatility. To make it specific, a strong position of US dollars in international trade settlement and exchange rate system makes north America a dominant player of inter-regional connectedness. Especially, volatility spillover from Middle East occurs with oil export.

Total volatility connectedness in global forex markets shows an obvious rise trend during periods of crisis. US dollars and Euros are major sources of volatility in global forex markets, while currencies with lower trading volumes are receivers of volatility. A significant effect of volatility spillover was observed to exist between Renminbi and other currencies before 2015, yet disappeared with decreased directional connectedness. Consequently, Renminbi is now more resistant to various shocks under more restrict capital account controls.

Key words: LASSO-VAR models; Foreign exchange markets; Total volatility connectedness; Directed volatility connectedness