Journal of Financial Management Strategy
Alzahra University
Vol. 12, No. 44, Spring 2024
pp. 31-34

Research Paper

The Effect of Political and Economic Uncertainty on the Instability of the Banking Sector in Tehran Stock Exchange (Time-Varying Parameter Approach)[1]

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Received: 2022/08/15 Accepted: 2023/02/27

INTRODUCTION

In light of the various factors influencing the stability of the banking sector, particularly evident in the price volatility observed in the capital market, this research endeavors to explore the impact of uncertainty indicators on the instability of the banking sector in the Tehran Stock Exchange market. Despite previous investigations, the influence of uncertainty indicators on the stability of the banking sector within the country remains relatively understudied. Leveraging insights from the expanding global literature, this study specifically investigates the effects of two key uncertainty indicators—economic uncertainty and government policies—on the stability of the banking sector. A notable aspect of this research is the utilization of the time-varying vector autoregressive model (TVP-VAR) to address structural instability in model parameters.

1. DOI: 10.22051/JFM.2024.41325.2720
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MATERIALS AND METHODS

The present study adopts an applied purpose and employs correlational analysis to investigate its hypotheses. In terms of nature and method, it is analytical in approach. The data characteristics and direction are retrospective, utilizing historical information. The collection of theoretical sources employed the library research method, while the archival method was utilized to gather necessary data for hypothesis testing, involving accessing records from the Central Bank and the official website of the Tehran Stock Exchange.

This study analyzes monthly data from April 2010 to March 2020 (1399-1389 according to the Iranian calendar) using the Time-Varying Parameter Vector Autoregressive (TVP-VAR) model. The research examines the effects of economic uncertainty indicators, such as inflation uncertainty, and government policies, including exchange rate uncertainty and government revenues, on the price volatility of the banking sector in the Tehran Stock Exchange. All variables were measured using their growth rates.

Analytical procedures for this research were conducted using EViews version 10 and MATLAB R2018a software.

RESULTS AND DISCUSSION

Time series econometric methods were utilized for optimal autoregressive model selection. Selection criteria such as the Ljung-Box test, Akaike Information Criterion (AIC), and Bayesian Information Criterion (BIC) were employed, formerly known as the Schwartz Criterion. Subsequently, the Autoregressive Conditional Heteroskedasticity (ARCH) Lagrange Multiplier (LM) test was conducted to examine the presence of ARCH effects in the model. The null hypothesis, suggesting no ARCH effect, was rejected at a 99% confidence level, indicating the existence of such effects.

Estimation results from the Exponential Generalized Autoregressive Conditional Heteroskedasticity (EGARCH) models, including the parameter gamma (γ), showed statistical significance across all four variables, confirming the presence of asymmetric effects from variable shocks. In this study, the Time-Varying Parameter Vector Autoregressive (TVP-VAR) model was employed to analyze the impact of uncertainty indices on the price volatility of the banking sector.

The results of the Johansen cointegration test, here referred to as the J-Wok test, indicated that the null hypothesis from 1992 could not be rejected, as all test statistics exceeded the 0.05 threshold. Additionally, the inefficiency factor (IF) for posterior

estimates was satisfactorily low (below 50), indicating the effectiveness of the Markov Chain Monte Carlo (MCMC) algorithm's sampling method.

According to the Impulse Response Functions (IRFs), inflation uncertainty, as a proxy for economic uncertainty, was estimated to have a positive impact on the instability of the banking sector in the Tehran Stock Exchange. Similarly, uncertainty in government policies, measured through exchange rate uncertainty, also positively influenced the volatility of the banking sector. However, uncertainty in government policies, as measured by the tax revenue uncertainty index, exhibited a negative impact on price volatility, albeit diminishing over time.

CONCLUSION

This research aims to examine the impact of economic uncertainty and government policies on the price volatility of Iran's banking sector within the Tehran Stock Exchange, with a focus on accounting for structural instability in model parameters. To achieve this, the Time-Varying Parameter Vector Autoregressive (TVP-VAR) model was employed. This model, capable of accommodating parameter instability and allowing coefficients to vary over time, offers insights that better reflect real-world dynamics.

Various GARCH models were considered to estimate the uncertainty of research variables, including symmetric, asymmetric, and non-linear specifications. Ultimately, the Exponential Generalized Autoregressive Conditional Heteroskedasticity (EGARCH) model was chosen as the optimal model based on information criteria and the significance of asymmetry coefficients.

Using monthly data from April 2019 to 2020, the final model estimation revealed that the effects of uncertainty indicators on banking sector instability vary over time. Specifically, the influence of government policy uncertainty, represented by tax revenue uncertainty, was initially negative but became positive towards the end of the period.

Impulse Response Functions (IRFs) demonstrated that inflation uncertainty positively affects Tehran's banking sector instability. Similarly, government policy uncertainty, reflected in exchange rate volatility, also has a positive impact on sector turbulence. These findings underscore the interconnectedness of inflation and capital market dynamics, emphasizing the importance of sound monetary policies, inflation control, and currency value preservation for fostering a stable banking environment and broader economic well-being.

Moreover, while IRFs suggest that uncertainty in government policy, as measured by the tax revenue uncertainty index, initially negatively affects banking sector price volatility, this impact diminishes over time.

Keywords: Banking Sector Instability, Economic Uncertainty, Government Policy Uncertainty, Time-Varying Parameter Autoregressive (TVP-VAR).

JEL Classification: D81, H12, P11.