

**CHRIST**(DEEMED TO BE UNIVERSITY)  
BANGALORE | DELHI NCR | PUNE

## Notice for the PhD Viva Voce Examination

Ms Nidhiya Maria Thomas, Registration Number: 2190063, PhD Scholar at the Department of Commerce, School of Commerce, Finance and Accountancy, CHRIST (Deemed to be University) will defend her PhD thesis at the public viva-voce examination on Tuesday, 23 June 2026 at 11.30 am in Room No. 044, Ground Floor, R&D Block, CHRIST (Deemed to be University), Bengaluru - 560029, Karnataka, India.

<b>Title of the Thesis</b>	:	<b>Price Prediction, Bubble Forecast, and Spillover Effect in the Crypto Market</b>
<b>Discipline</b>	:	<b>Commerce</b>
<b>External Examiner - I</b>	:	<b>Dr Santhosh Kumar</b> Professor School of Management Studies Cochin University of Science and Technology South Kalamassery, Ernakulam Kerala - 682022
<b>External Examiner - II</b>	:	<b>Dr Jaya Mamta Prosad</b> Associate Professor Lal Bahadur Shastri Institute of Management Dwarka, Sector-11 Delhi - 110075
<b>Supervisor</b>	:	<b>Dr Natchimuthu N</b> Associate Professor Department of Commerce School of Commerce, Finance and Accountancy CHRIST (Deemed to be University) Bengaluru - 560029 Karnataka

The members of the Research Advisory Committee of the Scholar, the faculty members of the Department and the School, interested experts and research scholars of all the branches of research are cordially invited to attend this open viva-voce examination.

**Registrar (Academics)**

**Place:** Bengaluru  
**Date:** 13 June 2026

## ABSTRACT

Cryptocurrencies emerged in the aftermath of early-century financial instability. Since then, it has expanded into a market of thousands of assets. Each of them serves distinct roles within the digital ecosystem. Among them, Bitcoin, Ethereum, and XRP have become the most prominent due to their technological designs and functional characteristics. With the growth and innovation in the market, extreme volatility and frequent bubbles have become features of the market. These features raise two questions. Whether ex-ante detection of bubbles is possible, and how the relationship between major exchanges shifts during bubble periods. This study addresses this gap by developing a framework for early bubble detection and analysing the time-varying spillover effect between two major crypto exchanges.

The major contribution of this study is the development and validation of an early bubble warning system. The study integrated the prediction capabilities of the LSTM algorithm with the structural pattern identification feature of LPPL to develop the framework. The study shows that the combined LSTM-LPPL framework successfully identifies emerging bubbles. This supports its value as a proactive risk management tool.

The second contribution is the study of market interconnectedness. The study analyses the change in market connection with the change in market regime. Bitstamp and Kraken exchanges are used to understand the spillover effect. The study used different econometric tests for the analysis. VECM is used to understand the long-term equilibrium, and TVP-VAR for the short-run spillover. The spillover changes during normal and bubble periods are also analysed. To know if there is any change in the predictable relationship in the short term, the Granger causality test is used.

VECM analysis confirms that the exchanges have a long-run equilibrium. TVP-VAR spillover analysis shows that the cryptocurrencies behave differently in the short-run dynamics. Each cryptocurrency shows different spillover patterns during normal and bubble periods. There is no short-term directional predictability for Bitcoin and XRP as per the Granger causality test. However, Ethereum shows unidirectional causality during normal periods. It changes to bidirectional causality during bubble periods. This shows that each cryptocurrency has its own unique market behaviour. These findings portray the cryptocurrency market as a hybrid system. The markets are well integrated in the long run, yet highly susceptible to short-term inefficiencies. The study offers a new framework for investors to anticipate and manage risk.

**Keywords:** Cryptocurrencies; Ex-ante bubble detection; features selection; spillover dynamics, Long Short-Term Memory (LSTM); Log Period Power Law (LPPL); Time-Varying Parameter Autoregression

### Publications:

1. **Thomas, N. M.** & Natchimuthu, N. (2025). Beyond Hype: Understanding Cryptocurrencies Through Its History. In E. Tomé (Ed.), *Concept, Theories, and Management of Cryptocurrencies* (pp. 41-70). IGI Global Scientific Publishing. <https://doi.org/10.4018/979-8-3693-5986-0.ch002>
2. **Thomas, N. M.**, & Natchimuthu, N. (2025). Bubble dynamics: Understanding the development trajectory of the cryptocurrency market through its bubble periods. *Multidisciplinary Reviews*, 9(3), 2026129. <https://doi.org/10.31893/multirev.2026129>
3. **Thomas, N.M.**, Natchimuthu, N. (2025). Twin Benefits: A Study on the Implementation of Digital Twin in Crypto Mining Optimization. In: Hamdan, A. (eds) *Integrating Artificial Intelligence, Security for Environmental and Business Sustainability*. *Studies in Systems, Decision and Control*, vol 608. Springer, Cham. [https://doi.org/10.1007/978-3-031-96641-5\\_63](https://doi.org/10.1007/978-3-031-96641-5_63)
4. **Thomas, N. M.** & Natchimuthu, N. (2024). Elucidating Nuances: A Comparative Study of LSTM Algorithms and Sentiment Integration in Crypto Price Prediction. In B. Pandow, F. Masoodi, J. Iqbal, & G. Hussain (Eds.), *Navigating the Future of Finance in the Age of AI* (pp. 67-93). IGI Global Scientific Publishing. <https://doi.org/10.4018/979-8-3693-4382-1.ch004>