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Hamori, Shigeyuki

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Editorial

Recent Advancements in Section "Financial Technology and Innovation"

Shigeyuki Hamori

Graduate School of Economics, Kobe University, 2-1, Rokkodai, Nada-Ku, Kobe 657-8501, Japan; hamori@econ.kobe-u.ac.jp

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We have published a lot of interesting and excellent research articles in the *Journal of Risk and Financial Management*. As a Section Editor-in-Chief, I would like to introduce nine excellent papers from the Financial Technology and Innovation Section in order to promote them to increase our Section's online discovery. These articles have some particular features, i.e., analysis of cryptocurrencies, the application of machine learning techniques, and the use of high-frequency data. These characteristics indicate that the research subjects and analytical methods of researchers are closely related to the current interests of society.

Luu Duc Huynh (2019) investigates the spillover effects in the cryptocurrency market by using vector autoregressive (VAR) models, structural VAR (SVAR) models, and Student's t copulas. The empirical results based on VAR and SVAR models indicate that Ethereum tends to be independent and Bitcoin is likely to be the spillover effect recipient in the cryptocurrency market. The results based on the Student's t copulas indicate that all coins have joint distribution in extreme value, which might cause a simultaneous downside trend with 'bad news'.

Kyriazis (2019) is a survey article to understand the predictability of the pricing behavior of cryptocurrencies. They report that the majority of academic papers provide evidence for the inefficiency of Bitcoin and other digital currencies of primary importance, and thus, speculation trading is feasible.

Chen and Hafner (2019) apply the smooth transition autoregressive (STAR) model to the CRyptocurrency IndeX (CRIX) and find that volatility negatively depends on the sentiment index. This indicates that bad sentiments or news increase volatility, which is consistent with the feature commonly called the leverage effect in classical financial markets. In other words, the leverage effect is explicitly driven by the sentiment index.

Munim et al. (2019) compare the forecast performance of Bitcoin prices between the autoregressive integrated moving average (ARIMA) model and the neural network autoregression (NNAR) model. They report that the ARIMA model outperforms the NNAR model in terms of root mean square error (RMSE), mean absolute percent error (MAPE), and mean absolute scaled error (MASE) for test samples. The results of the Diebold–Mariano test also suggest that ARIMA forecast results are more accurate than the NNAR forecasts. These results indicate the superiority of the ARIMA model over the NNAR model to forecast Bitcoin prices.

Fischer et al. (2019) analyze how machine-learning-based statistical arbitrage strategies would fare in the cryptocurrency space on minute-binned data. Using the random forest techniques, they find that the cryptocurrency market may not (yet) follow the semi-strong form of market efficiency (Fama 1970).

Shintate and Pichl (2019) proposed a new trend-prediction classification learning method (random sampling method, RSM) for cryptocurrency time series. Their experimental results indicate their approach is superior to two baseline methods (multiple layer perceptron and long short-term memory) in predicting unstable Bitcoin prices.

Schnaubelt et al. (2019) use the structured framework for analyzing limit order book data in order to identify similarities and differences between established financial markets and major cryptocurrency

exchanges. They find that some similarities exist: symmetric average limit order book, dispersion of liquidity, no autocorrelation in lower-frequency returns, negative autocorrelation in tick-level returns, volatility clustering, non-normality of returns, the timing of large trades, and power tails in trade size distribution. They also find some differences: relatively shallow limit order book, weak intraday patterns, frequent minor trades, and broad distribution of limit order prices.

Catania and Sandholdt (2019) analyze the high-frequency returns and their realized volatility of Bitcoin. They have not found any evidence of predictability of returns over one day, but they have found some evidence of predictability of a sample frequency up to 6 hours. Their results also show that the predictability of realized volatility increases over time; leverage components help predict future volatility levels; and predictability depends on the forecast horizon.

Ptak-Chmielewska (2019) uses several machine learning techniques (logistic regression, decision trees, neural networks, gradient boosting, and support vector machines) to investigate whether both financial and non-financial ratios are important for the survival of small enterprises. They find that several financial ratios (operating profitability of assets, current assets turnover, capital ratio, coverage of short-term liabilities by equity, coverage of fixed assets by equity, and the share of net financial surplus in total liabilities) and two non-financial factors (sector of activity and employment) are important to predict the failure of small enterprises.

These articles all contribute to the development of empirical finance, addressing a wide range of issues and topics related to financial technology and innovation.

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