

Financial Risk Monitoring and Market Regime Classification in Emerging Markets: Evidence from the Dhaka Stock Exchange

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ABSTRACT

Automated risk monitoring in emerging markets like the Dhaka Stock Exchange is difficult due to the market's extreme instability and unpredictable behavior. Traditional systems are usually based on an immutable set of rules-based thresholds. But these approaches are not always responsive to market flipping points, and the false alarm rate is too large. The CBA-Regime Net, A novel multi task deep learning framework is suggested to overcome these limitations. In contrast to current strategies, this model employs a dynamic rolling volatility threshold to name risk regimes dynamically with respect to the changing market environment. The architecture includes 1D-CNN feature extractor and Bi-LSTM with Temporal Attention. With this combination, one can achieve a good expressiveness in complex temporal dependencies of the data. One of the major innovations is the adoption of Multi-Task Learning where an auxiliary price forecasting task is used as a regularizer. This forces the network to discover the basic market dynamics like momentum changes instead of memorizing stochastic noise. The experimental findings about the unseen data prove that the model attains accuracy of 91%. It also performs significantly better than baselines, such as GRU and Bi-LSTM, in providing a clear and strong early-warning framework to automated risk management.

Keywords: Financial Risk Monitoring; Multi-Task Learning; Market Regime Classification; Attention Mechanism; Emerging Markets; Dhaka Stock Exchange (DSE)

JEL Classification: G10, G17, C22, C45, C58

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