

# Detecting Illicit Financial Flow through Gaussian Multivariate Anomaly Detection Model

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## ABSTRACT

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This paper predicts a measurement indicator for the trade mispricing channel and its effectiveness in identifying IFFs. A model, gaussian multivariate anomaly detection algorithm, for classifying between a legal and illegal transactions that are suspicious in terms of misreporting was developed. The method is a machine learning technique, and uses data from South Africa, Botswana, USA, and China over a period from 2000-2019, to learn whether there is any intriguing differences on the model performance based on these countries and effect of other factors. Imports, Exports are used as features of the model while the netflow derived from these features is used as the third feature of the model. Imports and exports data are sourced from IMF's Direction of Trade Statistics database. Annual tariffs' data and corruption data comes from the WDI database and the Transparency International's Corruption Perception index, respectively. Data for 'accounting and auditing standards' comes from the world economic forum. This study contributes to the debate on trade mispricing by proving a baseline measurement to help detects and track IFFs. The result showed that while the model may be effective in detecting IFFs due to mispricing, other factors may however contribute to irregularities of trading data that is flagged as IFFs. This in addition to accounting for total quantum, also provide details empowering governments with the information to stimulate and drive the desire to curb IFFs from its different sources and channels.

**Keywords:** Gaussian Multivariate Anomaly Detection; GMAD; Illicit Financial Flow; IFF., Trade Mispricing; TM.,