

Time series analysis for the COMEX platinum spot price foretelling by using models based on SVM, MARS, MLP, VARMA and ARIMA: A case study

L.A. Menéndez García¹, P.J. García-Nieto¹, E. García-Gonzalo¹ and F. Sánchez Lasheras^{1,*}

(1) Department of Mathematics, Faculty of Sciences, University of Oviedo, C/ Leopoldo Calvo Sotelo 18, 33007 Oviedo, Spain

Abstract

Platinum is a chemical element with atomic number 78, located in group 10 of the periodic table of elements. Its symbol is Pt. It is a grayish-white, precious, heavy, malleable and ductile transition metal. It is resistant to corrosion and is found in different minerals, frequently together with nickel and copper. Moreover, platinum is a noble metal [1]. A noble metal is ordinarily regarded as a metallic chemical element that is generally resistant to corrosion and is usually found in nature in its raw form. Gold, platinum, and the other platinum group metals (ruthenium, rhodium, palladium, osmium, iridium) are most often so classified. Silver, copper and mercury are sometimes included as noble metals, however less often as each of these usually occurs in nature combined with sulfur. Platinum is used in jewelry, laboratory equipment, electrical contacts, fillings, and automobile catalysts [1].

Furthermore, the price of platinum is unstable but it is considered an important indicator of the global economy. Changes in the price of platinum point to higher global growth or an impending recession. In this work, the foretelling of the spot prices of platinum from the New York Commodity Exchange is studied using several time series machine learning (MARS, SVM and MLP) and classical techniques (ARIMA and VARMA) [2,3]. Using these techniques, different time series analyses are built and its performances are compared. The results of the present study are exposed in detail. Finally, conclusions of this innovative research work are exposed.

Keywords: Time series analysis; Multivariate adaptive regression splines (MARS); Support vector machines (SVMs); Artificial neural networks (ANNs); Vector autoregressive moving-average (VARMA); Autoregressive integrated moving-average (ARIMA); Platinum price forecasting

AMS: 62M10, 37M10, 91B84, 92B20, 68T20

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* Corresponding author: sanchezfernando@uniovi.es