CONSIDERATIONS ON FORECASTING EXCHANGE RATE

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Abstract: *The analysis of foreign exchange market involves studying the factors that influence market development and formation of a new currency Characterization and description of the trend can be done using statistical methods (simple) or analytical. In choosing a method an important role has the statistical chart and how to discover the existence and shape of the various components of a time series representation.*
Keywords: *Moving average, Linear regression, trend*

1. Introduction

The methodology of elaborating a forecasting study includes the following stages:

- Collecting , systematization and processing of initial value
- The establishing of the mathematical model that adequately describes the evolution of the analyzed phenomenon (the evolution of exchange rate)
- The analysis of the alternative obtained by the forecasting

According to the of the method underlying forecasting, we predict differences:

- Exploratory forecasting , when the analysis takes place from the past into the future
- Normative forecasting when the analysis takes place from the future into the past
- Hybrid (mixes) forecasting

The analysis of foreign exchange market involves studying the factors that influence market development and formation of a new currency. Thus, there are three basic types of market analysis:

- *Fundamental analysis* - studying fluctuations in exchange rates under the influence of economic and political factors in order to

determine the common trend of market development. This analysis is used primarily when dealing with long-term strategies based on the trends for several months or years.

- *Technical analysis*- it deals with the study of technical factors, with the use of financial and mathematical instruments. Technical analysis allows visual identification of the trend and the fundamental analysis explains the reasons of existence and continuity of these trends.

2. Forecasting exchange rate

The forecasting method is a researching path and knowing the reality in order to anticipate future action based on rationality, optimization criteria.

The quantitative techniques used in the prognosing study are presented as functions, econometric relations, equilibrium relations, estimation techniques.

Moving average (SMA) method is used especially when the time series has regular fluctuations (seasonal or cyclical) for a smooth evolution of the phenomenon. Long-term trend is determined as averages calculated of as many terms (m) to how many a complete oscillation occurs. Environments are called mobile, sliding, as permanently in the calculation of such average the first term of the previous average is left out and the next term is entered.

In this case m terms will be lost by centered calculating averages. By calculating moving averages, seasonal deviations are compensated.

Let us note that moving averages can also be calculated where there are no regular diversions in order to remove residual variations. As the moving averages are being calculated from a larger number of terms, more accentuated will be its smoothness; on the other hand, calculating averages of a shortage of terms it can make it impossible to eliminate residual variations from the actual values.

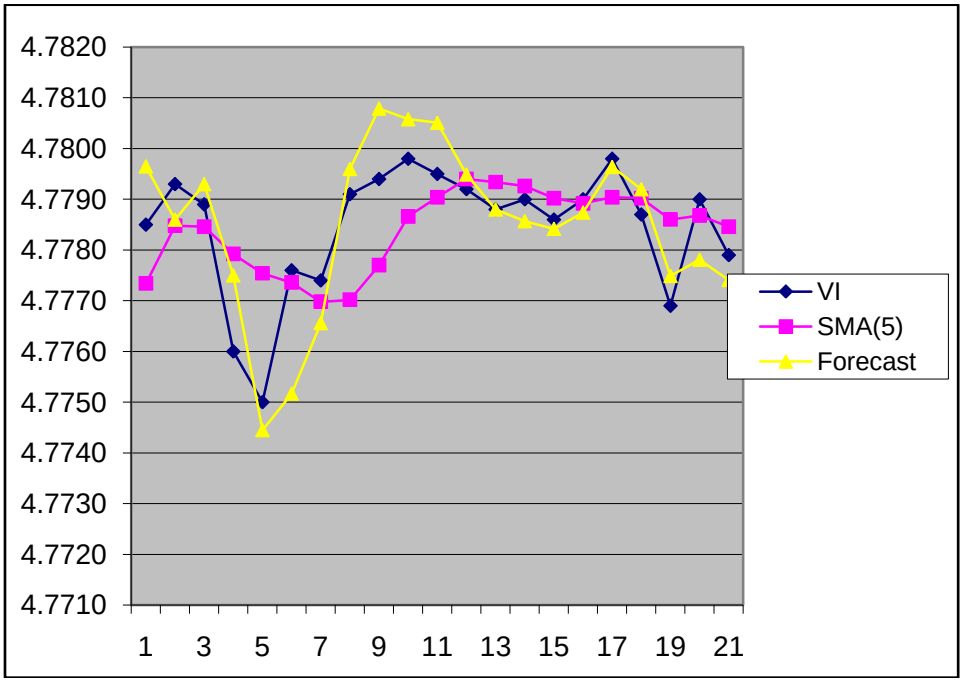


Fig. no.1 SMA vs Forecast

From the previous graphics, (Fig. no. 1) we see that *Forecast* approximates better initial values (VI exchange rate 20 December 2019-31 January 2020)

Simple linear regression (Forecast) assumes that the economic phenomenon Y (the effect phenomenon) is the result of a main factor X and of some factors with random actions considered nonessential, specify by the variable residual „ε”:

$$y = f(x) + \varepsilon$$

The probabilistic linear model for the variable Y-effect and X-cause (or endogenous and exogenous) in the case of a community is given by the relation:

$$y_i = a + bx_i + e_i$$

whose parameters are determined from the system:

$$\begin{cases} na + b\sum_i x_i = \sum_i y_i \\ a\sum_i x_i + b\sum_i x_i^2 = \sum_i x_i \cdot y_i \end{cases}$$

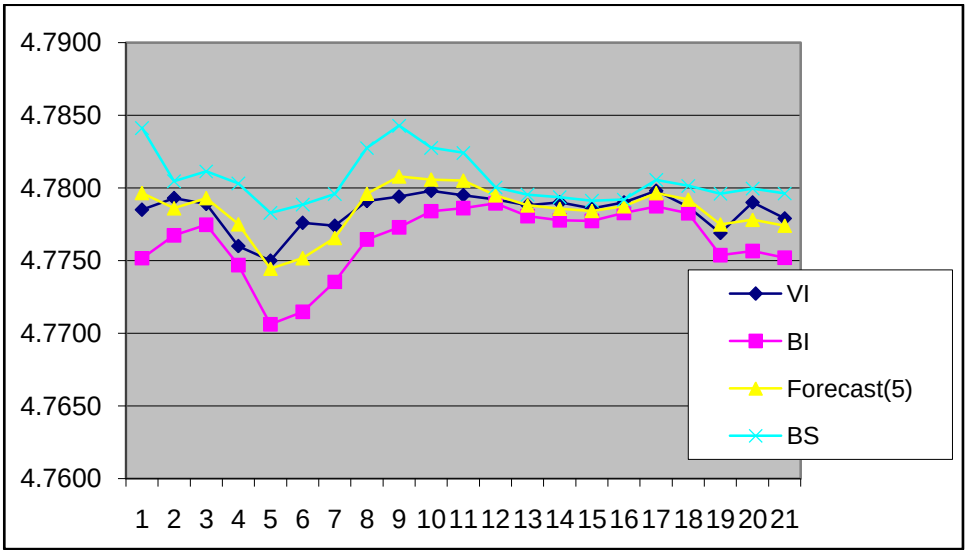


Fig. No 2. Forecast (5)

From the previous graphics, (Fig. no. 1, Fig no 2) we see that *Forecast (5)* approximates better initial values (VI).

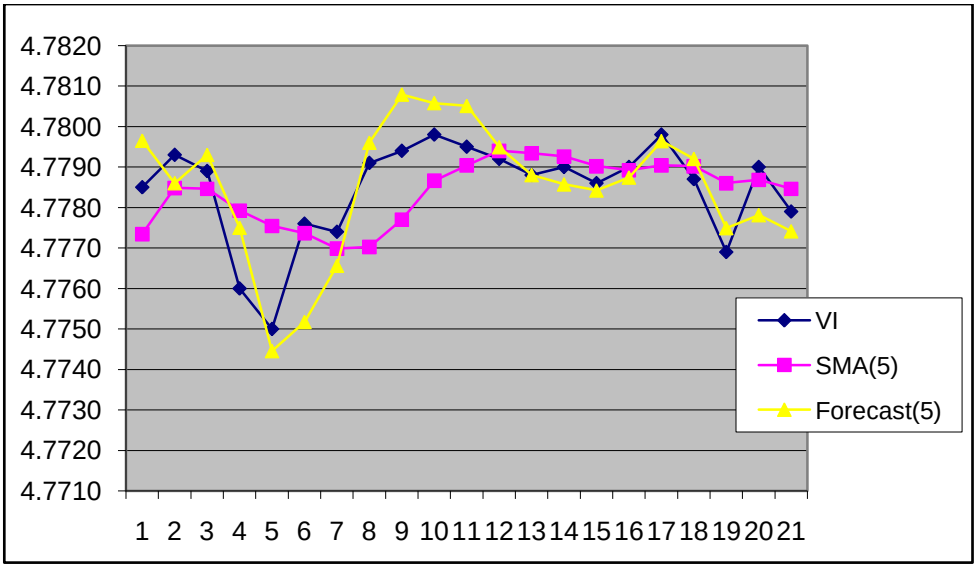
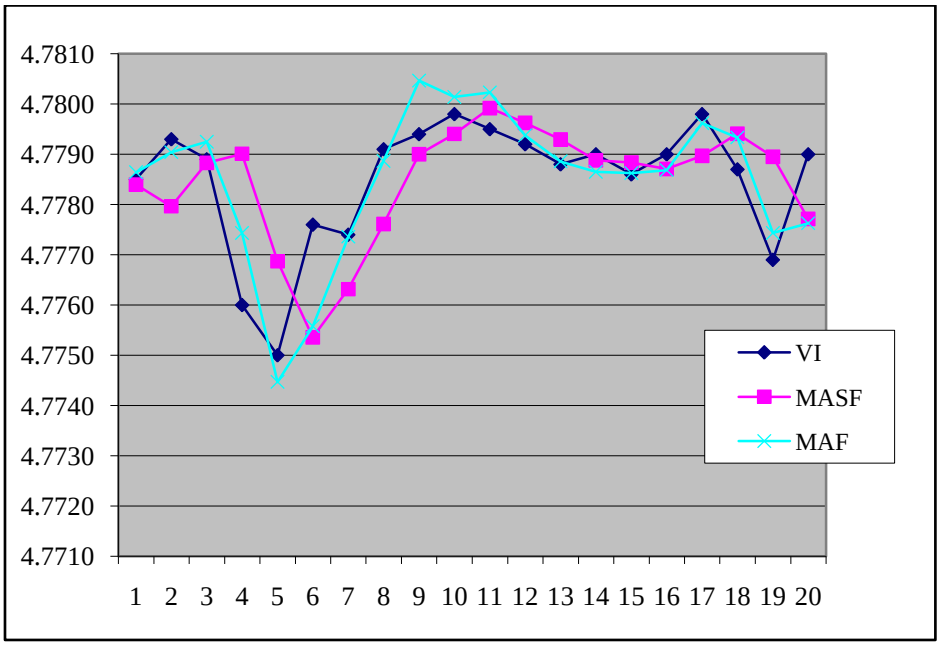


Fig. no. 3.

Therefore define the following indicators [1]:

$$MASF = \frac{SMA(5) + Forecast(5)}{2}$$

$$MAF = \frac{Forecast(3) + Forecast(5)}{2}$$



3. Conclusions

To determine and characterize the components that exist in a time series, it is advisable to make a valid prediction of future evolution.

There are several ways to lead the lower and upper confidence interval that will find the next value but is impossible to determine exactly because uncertainty and many factors influence leaves its mark on this value.

Previous graphs show that *MAF and MASF* has values closer to the the initial values than *Forecast* and *SMA.*

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