

# Prediction of an Exchange Rate Index

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This problem situation was written by Jesús Enrique Molina Muñoz ([jesus.molina@tec.mx](mailto:jesus.molina@tec.mx)), with the purpose of serving as class discussion material, it does not pretend to exemplify good or bad administrative practices. The story in this document is based on the experiences of different people, and some of their data have been modified as requested by the people and institutions involved.

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### The Company

Mesanicci is a designer clothes brand that specializes in the design and retail sale of high range clothing for adults. Founded by university students a decade ago as part of a school project in the Business School, Mesanicci has become a leader in the luxury fashion sector in Latin America. Their commitment to innovative sustainable material and the development of avant-garde collections have positioned the company as a fashion referral globally, with exports to Europe and ambitious plans to break into the Japanese and Korean markets soon.

Ana Paula Mesanicci, founder and CEO, is a fashion enthusiast who has transformed her vision into a thriving business. Her university education in Finance has allowed her to understand the relevance of understanding the dynamics of the different economic and financial variables that affect her sector and their impact on the optimization of the financial value of the business.

### The Consultancy

As a response to the growing demand of the Mesanicci products in the European markets and the expansion plans into Asia, Ana Paula has decided to hire two of her former schoolmates as consultants, specialists in the modeling and prediction of time series. The consultancy will focus on analyzing the future behavior of the US dollar relative to the main global currencies to favor Mesanicci's coverage strategies. The latter will have a significant impact on the results of the international expansion plans of the brand.

The CEO informs the consultancy team that one of the main challenges she faces is to accurately predict the US dollar exchange rates before the relevant currencies in her future expansion plans; the latter is due to the numerous factors that influence this variable.

**Image.** Ana Paula wants the expansion to include 15 countries in America, Europe, and Asia.



**Source.** Gustavo Fring in Pexels, 2020.

## The Approach

The consultancy team has decided to focus their efforts on the analysis and prediction of the Bloomberg® Dollar Spot Index (BBDXY) and the Bloomberg® Euro Spot Index (EURO), to track the behavior of the US dollar and the euro before other currencies. These indexes are available in different information sources, including Bloomberg® and Refinitiv®, among others.

The members of the consultancy team believe that these activities will provide them with crucial information about the dynamics of the main currencies employed in the future negotiations of the company. These will also help them to suggest to the CEO several coverage strategies that can be implemented to mitigate the risk of the exchange rate.

## Some Challenges

In two weeks, the consultancy team must present Ana Paula with an executive report about the analysis made. To achieve this, the consultants have decided to work with the percentage variations of the BBDXY and EURO exchange rate indexes. Given the complexity of the variables studied, it is crucial to carry out a comprehensive process of time series analysis where the right approach for data modeling is identified, providing a correct diagnosis of the specification selected. Additionally, the team believes it is relevant to know whether the two variables analyzed are cointegrated in the long term.

Based on the needs posed by Ana Paula, the consensus between the consultancy team members is that the selected model should be employed to predict the exchange rate indexes used and resort to both moving windows and expansive windows approaches. The latter, with the first 500 observations regarded as *in-sample* data, also suggests that the prediction must be complemented with a simulation exercise to corroborate the results obtained.

Finally, the consultancy team members have decided to add value to the project by presenting an analysis and prediction of the volatility of the BBDXY exchange rate index. This analysis will include relevant conclusions for the company regarding the turbulence experienced in this market and the implications for Mesanicci's operations in financial and strategic terms.

## References

Bloomberg® database: Para BBDXY y EURO.