

# CHAPTER 1

## INTRODUCTION

### 1.1 Introduction

In the current world, there are more and more transnational corporations which pay much attention into the FOREX market. Predicting future foreign exchange rates is significant for most transnational corporations and even for domestic central banks, which means enterprises can save massive money on the currency risk and central banks can prepare for future financial risks in advance. Because the fluctuations of the exchange rate can significantly have a great effect on international trade, investment, and domestic financial market stability, the authorities from different countries and lots of transnational enterprises are warned to research good methods analysing the FOREX market. Accurately forecasting future values of the FOREX is necessary for stakeholders to develop effective monetary policies, hedging strategies, and financial planning.

In fact, foreign exchange rates are influenced by a variety of factors, including inflation, interest rates, balance of payments, and other relevant risks. Interest rate plays a key role in the movement of the FOREX market because it directly affects the direction of investor returns and capital flows. Inflation, represented by the Consumer Price Index (CPI), plays a secondary role, with its impact on FOREX becoming noticeable when CPI significantly rises. In addition, the 10 Years bond usually can be confirmed as the future interest value by the financial market.

With the analysis of historical data on interest rates, CPI, and 10-Year bond, it can develop an effective model to address this puzzle, which can forecast future FOREX trends, suggesting stakeholders in making valuable and data-driving decisions. This study uses these factors to develop predictive insights, highlighting the relationship between macroeconomic indicators and foreign exchange rate movements.

## **1.2 Problem Background**

The frequent fluctuations of foreign exchange lead to substantial significant financial challenges for global businesses and economies. According to the 2022 financial reports of Google and Apple, they lost approximately \$1.511 billion USD due to dramatical exchange rate movements. And Apple reported losses of \$1.836 billion due to negative foreign exchange movements. These figures emphasize the importance of FOREX on transnational corporations, even minimal oscillation can transform the loss of billions of dollars.

Meantime in this aspect of the country, the consequences of FOREX instability also displays a tragic picture. For an obvious example, because of the rapid devaluation of the Argentine Peso against the US Dollar, Argentina has already aggravated economic and social life. The poverty rate in Argentina skyrocketed to over 52.9% in the first half of 2024, compared to 25.7% in 2018, which means 25 million people suffer from the lack of food, medical service, education and so on, according to the UCA Social Debt Observatory. This instance showcases that it is important for a country to develop effective tools to predict and mitigate the effects of currency fluctuations on both macroeconomic stability and social well-being.

## **1.3 Problem Statement**

Normally, many people face the problem of lacking valuable financial knowledge, rather than the Forex market. A useful and efficient data predicting models benefit their interest.

International businesses face Forex risk in nearly every transaction, which can decrease interest and increase costs if exchange rates shift unstably. This

uncertainty leads companies to rely on hedging strategies, which can be costly and complex. Developing improved methods for managing currency risk, especially for small and medium-sized enterprises, is a critical issue in maintaining global trade efficiency.

#### **1.4 Research Questions**

The proposed project aims to achieve the following objectives:

- I. How does the interest rate impact the pairs USD/CNY exchange rate from 2014 to 2024?
- II. Which variables have played a significant role in the movement of FOREX?
- III. How does the LSTM model forecast the future exchange rate of pairs USD/CNY?

#### **1.5 Research Objectives**

The objectives of the research are:

- (a) To analyse the trend of interest rate, exchange rate of USD/CNY, CPI and 10-year bond from 2014 to 2024.
- (b) To predict the future exchange rate of USD/CNY with interaction of crucial indicators by using the Long short-Term Memory (LSTM) model.

## **1.4 Scope and Limitation**

