The real effective exchange rate based on the Consumer Price Index (CPI) is a measure of the currency's competitive power. Because exchange rates change over short periods and are often ups and downs, speculators need effective methods to reduce risks. In this study, it was aimed to determine the method with the highest estimation performance by comparing the estimation successes of Artificial Neural Network models with different architectures, Box-Jenkins and exponential smoothing methods and to produce monthly real effective exchange rate based on CPI estimates for 2019 with the help of the determined model. The study benefit 195 monthly data between January 2003 and March 2019 which was obtained from the "Foreign Exchange Rates Statistics" bulletin published by the Central Bank of the Republic of Turkey. Forecasting performances of the models were evaluated by the MAPE statistics. As a result of the analyzes performed, it was found that Box-Jenkins Multiplicative-seasonal ARIMA (0,1,1)(1,0,0)12 model was the most successful one among the alternative models applied. With the help of the selected model, monthly real effective exchange rate forecasts were made for the year 2019.