

EXECUTIVE SUMMARY

This report has been prepared within the framework of Intervention 3.2 component of the “Strengthening the Impact of Conditional Cash Transfers for Increasing School Attendance in Türkiye (CCT II) Technical Assistance Project” to forecast the future demand for Social Assistance/ CCT in Türkiye.

This project examines the demand for Conditional Cash Transfers for Education (CCTE), which is part of the Conditional Cash Transfers (CCT) program provided by the government to fight poverty in Türkiye. The CCTE program provides assistance to families in financial need and without social security on condition that their children continue education. The main objectives of the CCTE program are to increase enrollment rates and thus contribute to development by improving human capital.

In this study, a comprehensive analysis has been conducted using various statistical models to forecast the future demand for CCT in Türkiye. The project aims to forecast the demand for CCT in 2025, 20230, 2035 and 2040. In the analysis, time series data and various forecasting models were used.

Demand for CCTE is measured by the number of applications for conditional education assistance. CCTE demand data were obtained monthly from the Ministry of Family and Social Services for the period July 2013 - October 2023. In the modeling, the number of CCTE applications is not directly used; instead, the number of CCTE applications per 1 million population is used.

In the methodology of the study, univariate and multivariate forecasting models are utilized:

- i. Univariate forecasting models
 - Autoregressive Integrated Moving Average (ARIMA)
 - Multi-Layer Perceptron (MLP)
- ii. Multivariate forecasting models
 - Autoregressive Distributed Lag Bound Test (ARDL)

As an alternative to these models, two other hybrid models that are expected to improve the prediction performance are also considered: CEEMDAN-ARIMA and CEEMDAN-MLP. RMSE, MAE and MAPE criteria were used to evaluate the prediction performance of all models.

In univariate forecasting models, the number of CCTE applications per population series is divided into two parts as training data for the period between 2013:07-2021:09 and test data for the remaining period between 2021:10-2023:10, and the performance of the forecasting models is compared using the test data.

In the multivariate forecasting model ARDL, the Sen-Shorrocks-Thon (SST) poverty index and the Human Development Index (HDI) are included in the model as the explanatory variables. For both variables, projections were made until 2040 with the CEEMDAN-ARIMA model.

According to the analysis results, the hybrid CEEMDAN-MLP model was identified as the one with the best forecasting performance compared to the other models. This model has successfully predicted the increase in the demand for CCTEs in the future and its change under three alternative population scenarios. The projections show that CCTE applications will increase between 2024 and 2040 and this increase will vary according to population projections. In 2040, the number of CCTE applications is expected to reach 420 thousand according to the 95% lower bound of the population, 441 thousand according to the median population and 463 thousand according to the 95% upper limit of the population.

In conclusion, the findings of this project provide important insights to improve the effectiveness of the CCTE program in Turkiye and prepare for further increases in future demand. By using these analyses, the government and relevant institutions can more effectively plan and implement social assistance policies and resource allocation.

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