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Forecasting Methods and Higher Education Enrollment in Egypt (2008-2012)

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Economists have long been interested in explaining determinants of higher education enrollment (HEE) more than in developing models that forecast enrollment well. The majority of studies emphasize on the United States of America. The purpose of this paper is to discuss the different methods of forecasting and use the appropriate one(s) to predict HEE in Egypt taking into consideration lack of data. Therefore, the paper provides brief description of forecasting methods and some applications. forecasting methods can be classified into two broad groups, subjective and objective. Subjective methods are not data driven. Data is only used for display purposes. In contrast, objective methods use data to generate a baseline forecast that becomes the point of reference in the process. The first issue the analyst needs to address is whether the data are sufficient to permit quantitative analysis. If not, judgmental procedures are called for. Some cases call for both approaches. For judgmental procedures, the first issue is whether the situation involves small or large changes. For small changes, where no policy analysis is needed and where one gets good feedback – such as with the number of foreign professors that will come to a university at a given time – unaided judgment can work well. But if the feedback is poor, it helps to use many experts as with Delphi. Moreover, it reviews the available literature on the main determinants of higher education enrollment.

The methodology used to produce the forecasted HEE is based on using the exponential smoothing techniques and trend model to get the predicted values of enrollment rates. The predicted values of enrollment rate are then multiplied by the population age group 18-23 projections of the Central Agency for Public Mobilisation and Statistics (CAPMAS) in Egypt to obtain the total enrollment projections. The data of HEE in the period (2003-2007) on the aggregate level comes from Strategic Planning Unit at Ministry of Higher Education. Unfortunately, there is no available data before 2003 in a regularly form. Anyhow, five-years represent an appropriate period to use the smoothing techniques and trend model. The forecasts are based on extrapolations of recent trends for HEE, plus some educated guesses about future conditions for the period (2008-2012). Statistical trend fitting models have not been widely studied in the context of enrollment forecasting, particularly their forecast accuracy. Therefore, we will use the smoothing techniques in addition to trend model and make a comparison between the results. The forecasting will be on three levels: total, male and female using EViews software.

The best techniques selected in the forecasting are Holt-Winters and double exponential smoothing techniques in all cases except the female case, the double technique and trend model are the best. These techniques give low error rate. The study does not develop econometric model capturing the unemployment rate and cost of studying for example because the enrollment rate in Egypt is considered an exogenous variable determined by the admission policy.