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Open and distance education programs of Anadolu University since the establishment

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Abstract:
In our study we evaluated the policy of Anadolu University in reaching to the community in wider sense. We examined the relationship of time with the number of programs by using linear models for 1982-2014 period. We used some specific dummy variables in the model to express the structural changes over time. According to oursignificant model, we made predictions for the next few years. In conclusion we realized that since the establishment, Anadolu University tried to answer to the demands of society from a broader perspective by monitoring the technologic developments in the world related to open and distance education.

Keywords: Anadolu University, Open and Distance Education, Time Series, Dummy Variable, Structural Changes

1. Introduction

The size of the demand for higher education both in the terms of campus or open and distance education, depends on the employment opportunities of the graduates more than the offered training programs and the names and images of the education institutions. If we assume that, all of the programs are starting after considering the employment opportunities and achievements of the students, the number of the programs will gain vital importance. For this reason, in this study by considering the structural changes, we tried to evaluate the linear relationship between the time variable and the number of open and distance education programs at Anadolu University for 1982-2014 period. As in many time series structural breaks, jumps and changes in trend may occur in the data of the historical development of Open and Distance Education. Here time is the independent variable and the number of programs is

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the dependent variable. These structural breaks can be observed in the data of universities as seen in various data of some countries. We discuss the structural changes which we observed in the number of programs, in the linear regression models in the scope of dummy variables. We take the subject into consideration on Anadolu University Open Education Faculty's programs. Therefore, we examined the number of programs which are opened and closed in 33-year time frame. Because for opening new programs in a university, especially in open and distance learning does not depend on only the resources, economic power, technology, sub-structure and academic staff of that university. This decision is at the same time, depends on the expectations of the young population, the demand for community education, the demand for public education in the country and many other factors. Therefore, the number of programs is a very significant variables which should be considered.

2. Open and Distance Education Programs of Anadolu University From Yesterday to Today

As known, the first important example of open and distance education applications in Turkey can be regarded as YAY-KUR which was established as the result of the decision to promote the mass education policy of the 2nd Five-Year Development Plan, and nearly 50 YAY-KUR schools (vocational schools) was initiated in the years of 1975 and 1974. Yet again in the period of the 2nd Five-Year Development Plan, Eskişehir Academy of Economics and Commercial Sciences established closed-circuit television system in order to make mass education in an educational institution for the first time in Turkey, with this organization, Eskişehir Academy has already established the infrastructure of open and distance education. Because in this system courses given in the television studio could be delivered to a large mass of students located in the classroom. The successful implementation of the Academy had been closely followed, examined and learned by the public administration. Indeed, in 1982 a law numbered 2547 was enacted with the goal of restructuring higher education in Turkey. While this law was being drafted the success of Eskişehir Academy was taken into account and Open Education Faculty was established at Anadolu University in Eskisehir as a first in Turkish Education System. In fact, with the establishment of this faculty we need to mention here that a very serious phenomenon has emerged. The law numbered 2547 which was acted by the need of restructuring Turkish higher education, first of all probably aimed to raise the rate of enrollment to higher education. This target would stay as a distant dream even today, without the success and the establishment of Anadolu University Open Education Faculty at that time.

Anadolu University was the first university which started open and distance education with Economics and Business Administration program in Turkey, Anadolu University Open Education Faculty has wasted no time since 1982. From the first day, trained staff of the University started to prepare the textbooks according to distance learning techniques which were delivered to students in order to support television lectures. So, television programs and textbooks were used as effective training tools.

Anadolu University, started to implement a powerful open and distance education system with a slogan that emphasizes both the objectives and the target points very clearly. This slogan was, planting the flag of Anadolu University in every city in the country and to offer the opportunity of higher education to all society throughout the country. Although working according to this exciting slogan, capacities of Economics and Business Administration Program in the early 80s, were limited. However, the nature of the massive demand for higher education remained for a while. But in time, the social demand has reached saturation point. Especially in the second half of the 90s 'application and registration' demands are met with significantly increased capacity by 40% and 50% at first, then fell to 25% in subsequent years. Individual demands of those who want to study in this period gained priority and weight. Therefore in these years, by taking the concentrations of individual interests and expectations into account new educational programs were opened in order to meet different demands towards the different new programs (Barkan, 1998, pp. 288-310).

During the legislative changes made in the years 1993-1994, two new faculties was established with the names of Economics and Faculty of Business Administration at Anadolu University to carry out the programs of business and economics. By such organization, the expression of open education was eliminated from the diplomas. With this operation, encountering of graduates with a false perception who have equal rights with formal education graduates had been largely been prevented.

Between 1990 and 1997 covering seven years, Open Education Faculty by opening several degree completion programs experience a very volatile period. These license completion programs were opened as a result of public demand and offered by the public depending on its opportunities. Thus, every day on the way to a meet a larger mass of students which was the main target and coverage, transient elevations and stability were observed.

However, in this period Anadolu University followed the spread of open and distance learning technology and developed at the level of our world and country by succeeding in face-to-face teaching support applications with the support of country level offices which were built. While many similar open and distance education institutions around the world were failing in face-to-face teaching supports for open and distance education students. Anadolu University also induced society's education and training demand by the help of its country wide offices. This application, as undoubtedly increase the visibility and reputation of Anadolu University, and was able to increase its resources an also contributed substantially to the subject to remain unrivaled until today.

Between 1993 and 2008, Anadolu University built some new structures in order to move beyond the traditional functions of distance education and started to use much more intensive modern communication technologies. Among these, Anadolu University realized the first video-conference trial in 1997. In 1999, lectures in marketing were given by video-conferencing technology to the students in the Economics Department of Ahmet Yesevi Turk and Kazak International University in Kazakhstan.

As another first, Knowledge Management Distance Education Program was opened in 2001. More Internet and computer technology in this section, based on real-time began to be engaged in teaching courses. Students attended live classes in a virtual classroom environment with the course instructor. 2001-2002 academic year, "Second University" program was launched.

By 2008, Rector of the University opened a discussion and asked the university's senior academicians and management what lessons can be given by trained staff of open and distance education. A draft which has been prepared opened up for discussion by presenting proposals for new programs. After taking contributions to these proposals new programs were opened. However, these programs can be opened at short time, but that was not only because of the request of the Rector. The main reason was that the university's technological infrastructure had become available for this change. During this period, the Computer Research and Application Center (BAUM) were also ready with experience and equipment gained over the years and also have the possibility to evaluate many different exams of very large mass of students and else.

In recent years, interactive learning environment is enriched for learners by offering interactive e-books, video, audio, animations. In this way, the "Information" is transferred to learners with different center distance education techniques coming out of the ordinary. Apart from that, students began to take face-to-face lectures aiming to bring together academicians and experts online, and e-seminars continues.

Open Education exam are given to e-services in order to prepare students for the final exam more effectively and efficiently. Today discussion groups using customized courses cover both the instructor and course related courses, which are responsible for the exchange of information with other distance education students. Furthermore chat environments can be created. Thus, Anadolu University, creating more flexible learning models are trying to create a digital revolution. Anadolu University, also in recent years opened offices as well as Western Europe, Macedonia, Kosovo, Bulgaria and by giving weight to Open Education in Azerbaijan is showing trends of globalization

3. Methodology

The time variable can affect the dependent variable in two different ways. First generally, dependent variable in the examined time series may have a trend by the effect of time. Second, time variable may have a certain effect on time series data over a certain range and also may have another effect in another range (Draper & Smith, 1981, Ağaoğlu, 1989). A number of reasons may be cited on structural changes and jumps in the series. Multiple different trends can occur in this case. In such cases, multiple regression model with dummy variables is likely to be more suitable for the trend of the event. (Ağaoğlu, 1989).

Matrix of structural changes are as follows:

$$\begin{bmatrix}
1 & 1 & 0 & 0 & 0 & 0 \\
1 & 2 & 0 & 0 & 0 & 0 \\
1 & 3 & 0 & 0 & 0 & 0 \\
\vdots & \vdots & \vdots & \vdots & \vdots & \vdots \\
1 & 12 & 0 & 1 & 0 & 0 \\
1 & 12 & 1 & 1 & 0 & 0 \\
1 & 12 & 2 & 1 & 0 & 0 \\
\vdots & \vdots & \vdots & \vdots & \vdots & \vdots \\
1 & 12 & 16 & 1 & 0 & 1 \\
1 & 12 & 16 & 1 & 1 & 1 \\
1 & 12 & 16 & 1 & 2 & 1 \\
1 & 12 & 16 & 1 & 3 & 1 \\
1 & 12 & 16 & 1 & 4 & 1
\end{bmatrix}$$

The first column of the matrix above is established for the constant term. The second, third and fifth columns specify three different trends and the dummy variables are referred respectively as X1, X2 and X4.
X_3 is set to zero for all points on the first line and then goes to 1 for all points on the second linet o allow for a jump (positive or negative) from the first line to the second. In the same way, X_5 is set to zero for all points on the second line and then goes to 1 for all points on the third line to allow for a jump (positive or negative) from the second line to the third. If no other predictor variables are involved we can fit the model. X3 is the dummy variable which provides the jump to the second part from the first, and X5 provides the jump from the second part to the third.
According to these explanations our model are as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 \quad (1)$$

4. Application

Our data set consists all of the started open and distance education programs including degree, associate degree and bachelor's degree completion programs since the establishment of Anadolu University. Distribution of programs in the data set is as follows:

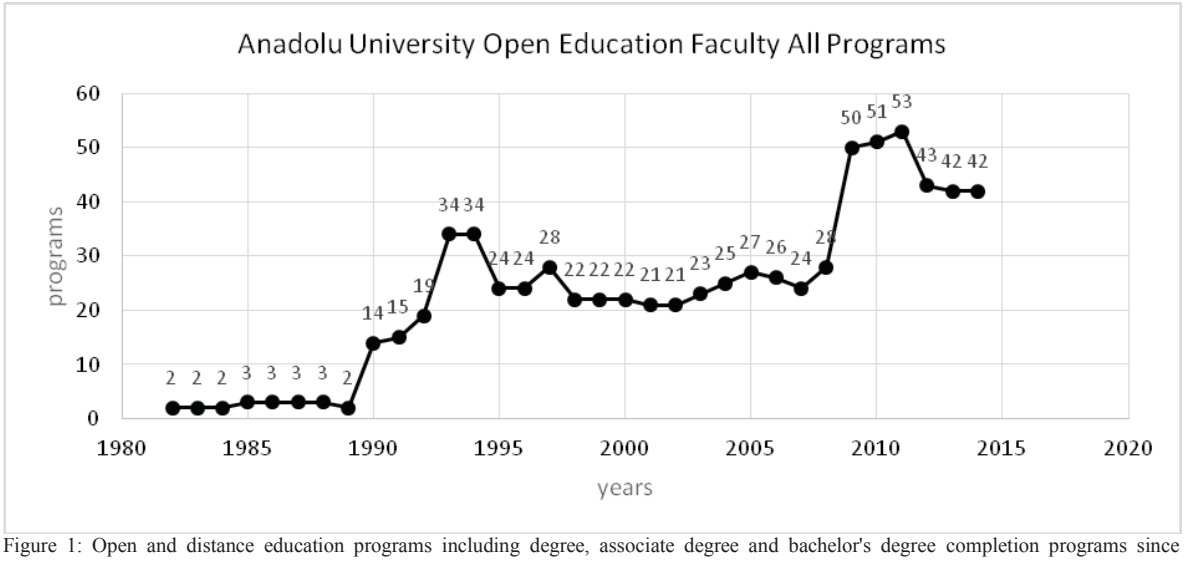

Figure 1: Open and distance education programs including degree, associate degree and bachelor's degree completion programs since the establishment of Anadolu University.

4.1. The Structural Changes in Our Analysis :

As mentioned above there are two important structural change points in our study:

1. Establishment of the Faculties with the names as Faculty of Economics and Faculty of Business Administration in 1993-1994. In addition, opening several new programs at the Open Education Faculty
2. The opening of many new programs in 2008 with the initiative of the Rector.
Therefore, we considered that the number of programs has a vital importance in our study. Then when we create the series, we saw these two major structural changes. According to these structural changes and our data set was divided into 3 periods as, from 1982 to 1992, 1993 to 2008 and 2009 to 2014.

4.2. Models of Our Analysis:

By considering structural breaks 4 models are produced in the study. While constructing the models, the distribution of the number of programs in the scatter diagrams is taken into account and models were produced accordingly with 4 assumptions below:
Model I: Model with structural changes and with existing trends in 3 periods.
Model II: Model containing structural changes, without an existing trend in 3 periods.
Model III: Model having structural changes without a trend in 1.period, but with trends in 2. and 3. Periods.
Model IV: Model of structural changes without a trend in 1. and 2., but with trend in the 3. Period.

Model I

$$Y = -3.145 + 1.555X_1 - 0.281X_2 + 11.910X_3 - 2.200X_4 + 29.408X_5$$

s.e.: (2.528) (0.373) (0.212) (3.142) (0.934) (3.494)
t : -1.244 4.171 -1.325 3.790 -2.354 8.418
F = 91.384 and S_y=3.91
R^2=0.944 and Adj R^2 = 0.934

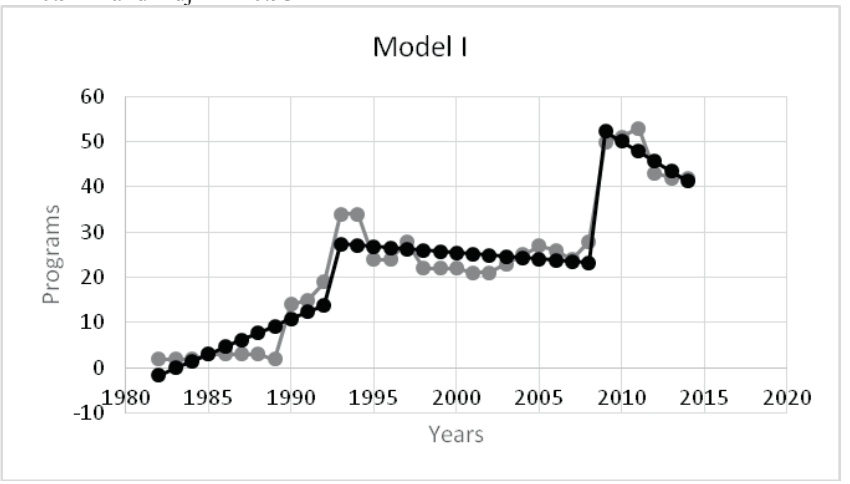

Figure 2: Model I

According to 0.05 significance level Model II is significant. But, β_0 and β_2 coefficients are statistically insignificant at 0.05 significance level. Because of the insignificant coefficients in Model I, we created Model II. In this model we only took jumps into consideration, and we assumed that there are no trends in all pieces.

Model II

$$Y = 6.182 + 19.131X_3 + 21.521X_5$$

s.e.: (1.547) (2.010) (2.456)
t : 3.996 9.519 8.761
F=125.414 and S_y=5.13
R^2=0.893 and Adj R^2 = 0.886

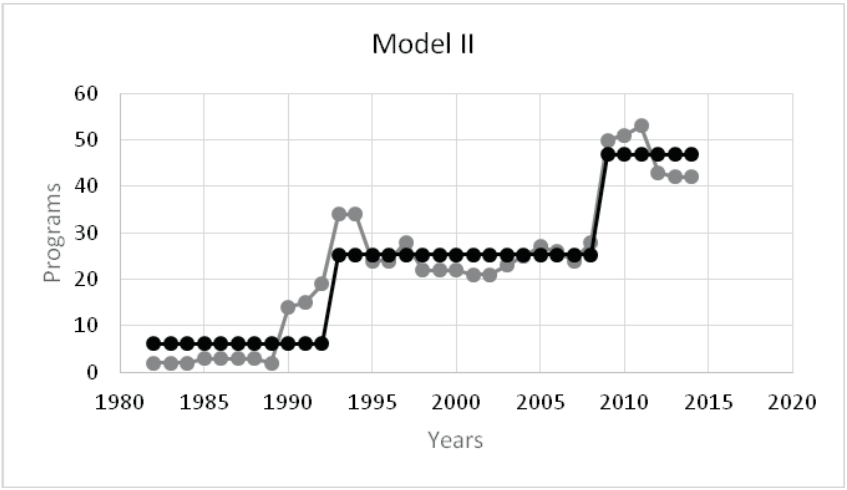

Figure 3: Model II

All coefficients of Model II are statistically significant at 0.05 significance level. Thus, we reached a significant model in Model II. However, we cannot say that there is a clear trend between 1982 and 1989. Accordingly, for the sake of reaching to a more significant model, without considering the trend in the 1. Period we produced Model III.

Model III

$$Y = 6.182 - 0.281X_2 + 21.237X_3 - 2.200X_4 + 29.408X_5$$

s.e.: (1.484) (0.267) (2.779) (1.177) (4.399)
t : 4.165 -1.052 7.641 -1.870 6.685
F= 69.299 and S_y=4.92
R^2=0.908 and Adj R^2 = 0.895

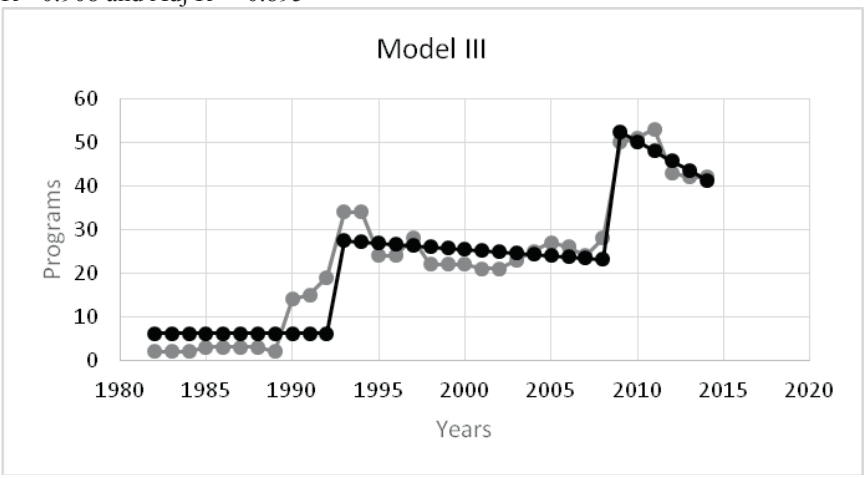

Figure 4: Model III

Model III is significant according to 0.05 significance level. However, the coefficient β_2 is statistically insignificant and β_4 coefficient is significant at the 0.10 significance level. All other coefficients are significant at 0.05 significance level.

Here, we concluded that there is no trend in the 1993-2008 time period due to the insignificant value of β_2. Then we continued with the assumption that there is a trend in the period between 2009 and 2014 and produced Model IV.

Model IV

$Y = 6.182 + 19.131X_3 - 2.200X_4 + 27.021X_5$

s.e.: (1.487) (1.931) (1.179) (3.776)

t : 4.158 9.905 -1.866 7.156

F= 91.69 and S_y=4.93

R^2=0.905 and Adj R^2 = 0.895

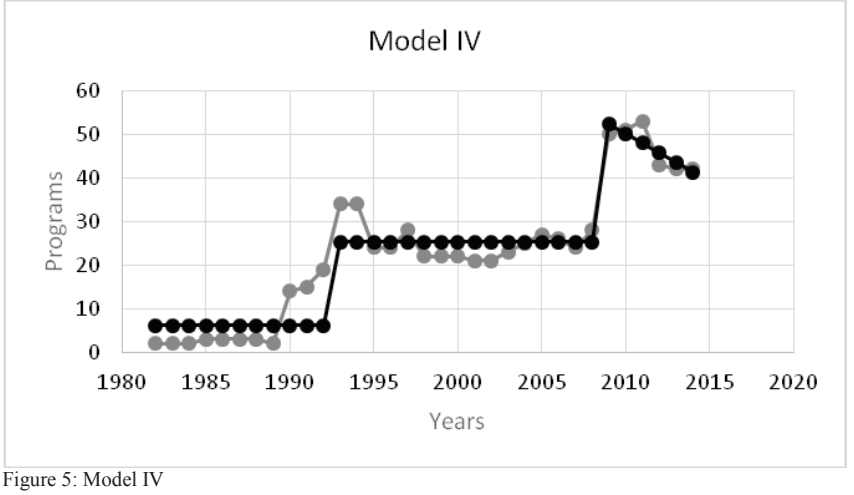

Figure 5: Model IV

Model IV is significant according to 0.05 significance level. However β_4 coefficient is statistically significant at the 0.10 significance level. And all other coefficients are also significant at 0.05 significance level. The level of significance at 0.10 is accepted in many social studies or in topics related to social issues. But here, β_4 coefficient because of the probability value 0.072, is rejected at 0.05 significance level.

4.3. Projections of the Models:

Model II has bigger standard error than others. β_4 coefficient of Model IV, which gives the slope of the 3. Period is statistically significant at the significance level of 0.10. As mentioned 0.10 significance level is accepted in social areas such as education. Therefore, it is difficult to specify the best model precisely at this stage. But, we can say that Model IV gives an early warning signal and this warning is noteworthy to mention that there is a reduction in the number of programs in recent years. The Model II is a model that shows a trend in the balance. Therefore, we must focus on both models and their warnings. According to Model II and Model IV, predictive values of the number of programs in following years was different from each other.

The Number of Programs in Model II and Model IV are listed in Table 1:

Table 1: Forecasting Values

Model II Standard Error.= 5.13			**Model IV Standard Error= 4.93**		
Forecasting years	Expected Values	Expected Program Numbers	**Forecasting years**	Expected Values	Expected Program Numbers
2015	46.834	47	**2015**	41.334	41
2016	46.834	47	**2016**	39.134	39
2017	46.834	47	**2017**	36.934	37

5. Result and Evaluations

Here the standard error of Model IV is 4.93 and only one coefficient of this model with the value of significance level 0.10 is accepted. From the statistical point of view, Model II is found to be statistically significant at 0.05 significance level both in terms of coefficients and model, and Model II has 5.13 standard error value. According to this model, in 1993 and in 2009 sudden increases occurred in the numbers of Open or Distance Education Programs

and these increases are reflected in the form jumps in the graphics. There is no trend in three different periods. Depending on the Model II, our forecasts about the number of enrollments for 2015 and following years is, 46.834. This shows us the number of our programs in the coming years will be approximately 47.

The decrease in the number of programs in 2009-2014 period, which is statistically significant at the 0.10 level is forcing us about the acceptability of Model IV in our analysis. As cited before, in many studies on social issues such as on education 0.10 significance level can be accepted. Furthermore, this model also provides early warning signals and according to Model IV there has been a sudden increase in the number of Anadolu University Open and Distance Programs in 1993 and 2009 and this is reflected in the form jumps in the figures. However, although continuing efforts of Anadolu University to use technology in open and distance learning recently there is a falling trend in program numbers, which can be accepted as a negative sign in the policy of giving education opportunities to the society in broader sense.

Two key demands are effective in opening new programs. The first one is social demand. Our university must follow the changing goals, priorities and transformation in society, and analyze and identify them carefully. Accordingly, university must organize a suitable open education and distance education policy. It is easy and necessary to give an example from the past. As we mentioned before, establishing two new faculties with the names of Faculty of Economics and Faculty of Business Administration in 1993 and eliminating the expression of open education from the diplomas. This operation prevented graduates from encountering a false perception. As for the future, universities should establish warm relations with the community and public administration and should continue to develop its infrastructure for new educational technologies. For this purpose, it is necessary for our university to maintain its power in every aspect.

References:

Ağaoğlu, E. (1989). İki Farklı Eğilime Sahip Zaman Serisinin Modellenmesi – (1970-1987) Türk İhracat Gelirlerine Uygun Tahmin Modeli, *Fen-Edebiyat Fakültesi Dergisi*, C:2, S:1, 135-149.

Barkan, M. (1998). Açıköğretim'de Değişim Rüzgârları: İngiliz Açık Üniversitesi'nde Uygulanan Değişim ve Yeniden yapılanma Programının Ulaştığı Sonuçların AÖF için Doğurgaları (1), *Kurgu Dergisi*, S:15, 288-310.

Draper, N.R. & Smith, H. (1981). *Applied Regression Analysis, Second Edition*, John Wiley and Sons, 250-252.