

Social and Economic Applications/Aplicaciones en la Sociedad y la Economía

ECONOMETRIC AND STATISTICAL RESPONSE MODEL APPLIED TO SOCIO-ECONOMIC CAREERS AT UAEM CU VALLE DE MÉXICO.

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RESUMEN

La presente investigación tiene como objetivo analizar el rendimiento académico de los alumnos del noveno semestre de las carreras económico-sociales del Centro Universitario UAEM Valle de México. Se estima un modelo de respuesta cualitativa en el que la variable dependiente se refiere al rendimiento académico y las variables explicativas seleccionadas se clasifican entre académicas, económicas y socio-demográficas. Entre los principales resultados, las variables académicas fueron estadísticamente significativas. En este sentido, variables como materias recursadas (o reprobatorias), carga de materias, elección de carrera, expectativas profesionales y horas de estudio influyen en el rendimiento académico. Se concluye que estas variables pueden explicar un alto o bajo rendimiento académico. El mejoramiento de dicho rendimiento debe centrarse en la instrumentación de políticas educativas institucionales. En particular de la disminución de la incidencia en el recuse o reprobación, así como en la revisión de la carga de materias.

ABSTRACT

The objective of this investigation is to analyze the academic performance (RA) of the ninth degree students of the socio-economical careers in the Centro Universitario UAEM Valle de Mexico (CUUAEMVM). For that purpose, we have estimated a qualitative response model having an independent variable that is a measure of the RA and dependent (explanatory) variables classified as academic, socio-economic and socio-demographic. From the analysis, we found that the academic variables were statistically significant especially: the failed (retaken) courses, the number of courses were taken, career selection, professional expectations and hours to study after classroom. As a conclusion, we may say that these variables explain a high or low academic performing. The improving of such performance must be centered on the application of educational (institutional) policies, particularly the decrease of retakeor failed courses, and the review of the bulk courses to take in a semester.

KEYWORDS: RA, academic factors, educational policies/educational programs improving

MSC: 62P99

1. INTRODUCTION

The economic globalization impacts to all the countries in the world. The educational sector is widely participating in this global process. It is demanded a better educational quality to all countries and address more resources in the investigation field, scientific development, and technological innovation. Mexico is playing an active role as a player in the economic world. It is required the academic training of young scientists, to develop original investigation to contribute to the better economic performing of the country. To get that proposal is necessary to identify the problems get along to the lower level of education.

This study was based on the CUUAEMVM university community, to analyze the academic performing of students coursing careers at the socio-economic area. To get the information we designed a questionnaire includes a set of academic, economic and socio-demographic variables that -we consider- may be affecting the student's RA. The purpose was to detect weaknesses in the teaching-learning process and take some actions to improve the curricula. We applied the Investigation-Action (IA) methodology, to find the hints for an integer and permanent improving the academic. The IA is featured by giving a vision centered on higher education, as

well as the methods, the preparation of the new professionals and generally the community/society concerns. Essentially this study applies a qualitative response or linear probability econometric model to let us identify the statistically significant variables affecting the RA.

2. RELEVANCE OF THE STUDY

The future of higher education is on the debate around the world. Among the themes under discussion, the transformation of the educational systems is underlined to face the challenges of the global world. According to ANUIES (2006), in Mexico those challenges are related to the quality of educational services to the students' preparation to integer humanist and cultural elements to their technical and scientific preparation. The university undergraduate students -called egresados-, would be better prepared to get into the development of our country, promoting a scientific-technological culture but having in mind the other values learned as sustainable development, democracy, human rights and the combat to poverty. The efforts to improve the higher educational system must include a group of activities focused on the comprehensive attention to the students (ANUIES, 2000).

The economic globalization demands more resources to education by every country. Mexico is one of those that have been done so extensive economic reforms to reduce the educational lagging and becoming an open and commercially integrated economy in the world, so the challenge is higher. The formerly said means that the internal and external educational competitiveness must be more necessary, therefore it is imperative to know the problems related to higher education, our focus is on the identification of those problems especially in the case of socio-economic university courses having as a universe the students in the CUUAEMVM.

This study is looking for those academic, economic and socio-demographic factors having a strong effect on the RA of the universe of students analyzed. Doll y Lyon (1998) consider that it is important to know the school problems faced by students along their career, the improvement of an educational quality means a better student. In this sense is very important to define a measure of the RA of students along their career from the enrollment to the graduation.

2. 1. Justification

Generally calling the educational supply has not been relevant because most of the academic programs are not considering the particular needs of the students, i.e., the vulnerable students. The evidence to support the fair preparation of elemental (primary school) and high school are not enough to assure that, nevertheless it is possible to get a hint –under certain degree of accuracy- that most of the students enrolled in a higher education (university) program, have neither the basic abilities nor knowledge to put on their studies and get a good RA.

One point of discussion is the low level of graduate degree or low RA observed in some of the analyzed socio-economic careers. Considering this we are willing to know the factors (internal and external), that produce that kind of performance, therefore we are looking for a continuous improvement to increase the efficiency on the student's RA (knowledge and labor competence)

2. 2. Objective and hypothesis

This study is addressed to achieve the following objective:

2. 2. 1. Objective

Analyze the RA of students coursing ninth semester of socio-economic careers (Actuarial science, Administration, Accounting, Law, Economics, Administrative computer applications and International economic relations), to detect the weaknesses in the learning process as well as the improvement/reinforcement of the curriculum, to let the enhancement of the academic management at the CUUAEMVM

2. 2. 2. Hypothesis

To prove the following:

The RA of socio-economic careers is explained by academic, socio-economic and socio-demographic variables. Otherwise, it means: how those variables make a variation on the RA of ninth semester students?

3. THEORETICAL APPROACH

The human capital theory (Lucas. 1988), related to the relationship between education and productivity -therefore the economic growing-, give us some fundamental theoretical arguments to be a base for the present investigation. Our approach is based on the studies of Estrada y Lasa (1995). The human capital comes up from the individual decisions related to available time, it is assumed that the accumulation of human capital generates positive external effects over the aggregated productivity of the economy. The assumptions are mentioned as follows:

a) The labor force is divided by categories depending on the individual degrees qualified in a scale from “0” to infinite. At this point, it is important to differentiate between available workforce and effective workforce;

- b) Every individual in a category of labor force spends a fraction of active time to the productive activity and the time left to the accumulation of human capital out of the production environ;
- c) The production conditions are shown by the known production function Cobb-Douglas;
- d) The average level of abilities (human capital) is supposed to grow in an exponential pattern.

The accumulation of knowledge is based on the fact because individuals spend part of their time in activities to increase abilities by either learning or training out of the labor journey, nevertheless this increase is not for free but the cost is based on the spent of time on those activities or the opportunity cost.

4. METHODOLOGY

The Investigation-Action (I-A) method is applied to education because contributes to the development of integer and permanent improvement of the curriculum and services. Bartolomé (1992) considers that the objectives of I-A method (identify action strategies). The proposals of such method are related with our investigation because our objectives are involved in the identification of internal/external factors mentioned before that may explain the RA of the segment of students included in our study. Hernández y Fernández (2014) presents the phases of the I-A method. The stages are:

- a) Detect the investigation problem, clarify and diagnose;
- b) Formulation of a plan to solve problem;
- c) Implement plan/program and evaluate results;
- d) Feedback.

Once the methodology was applied the next procedure is needed:

- a) Design of a simple test and questionnaire (with defined variables);
- b) Conduct the survey (field work) and analyze information;
- c) Generate continuous improvement alternatives to increase the efficiency levels of the RA of students

4. 1. The model

The I-A models consider the dependent variable (y), could be qualitative or quantitative while the explanatory variables could be either quantitative, qualitative or a mix of them. The quantitative dependent variable is set forth by a group of identified qualitative variables, which are codified by dichotomy options with values 0 or 1. The model is under the linear probability classification (Pindyck et al, 2001; Gujarati, 2004; Riascos, 2005). Because of the nature of that kind of models, the I-A model fits perfectly our investigation purposes.

The operational way of our hypothesis is shown by the regression equation below:

$$RA_{ij} = \beta_0 + \beta_i X_i + \mu_{it}$$

Where, RA_{ij} = student's RA (i) from 9th. semester of socio economic career j. Therefore the student could be a regular student (average marks from 6 to 10 and no failed courses) or irregular at least one course is failed (or courses retaken);

X_i = academic variable, economic or socio demographic i (i = 1, 2, 3, 4, 5, 6, 7, 8, 9 , 10, 11, 12 y 13). Otherwise, with 1 = academic support; 2 = burden of courses; 3 = age; 4 = career chosen; 5 = marital status; 6 = career expectations; 7 = study hours (after classroom); 8 = labor condition; 9 = retake courses; 10 = study options; 11 = prestige; 12 = enrollment reason and 13 = location. μ_{it} is the term of error.

4. 1. 1. Universe.

The total population of students to be analyzed is 343 which is the total number of people enrolled in 9th. semester courses in the socio-economic careers, as far as the study was started; therefore we are doing a census instead of a sampling research. Most of the students were concentrated in Law and Business administration programs, another group represented by International economic relations and Administrative computer applications, and a third group with fewer students integrated by the Economics and Actuarial science, from this last group Economics is also the career with the lowest level of graduate students (see Table 1)..

We assumed that the career coordinators, teachers and academic tutors may be able to incorporate techniques and strategies to guide the students to a good academic performance, therefore, the planning of those activities related to the assessment guidance is the focal

point to get the desired results. Following we describe the dependent and the thirteen explanatory variables considered to be analyzed in our study

Table 1. List of students enrolled in ninth semester courses by career. (2014).

CU UAEM Valle de México		
Socio-economic programs	Students enrolled	Percentage of total enrollment (%)
Actuarial science	14	4.08
Administration	52	15.16
Accounting	52	15.16
Law	123	35.86
Economics	13	3.79
Administrative computer applications	47	13.70
International economic relations	42	12.24
Total students enrolled	343	100.00

4. 1. 2. The variables

The field information about the 13 explanatory variables is obtained by a survey using a questionnaire.

The dependent variable is RA (academic performance), which was identified by the academic numeric average of every student, as far as the semester 2014 A. The thirteen explanatory variables are dichotomy.

Academic support. (AA). If the student obtained during his/her studies support and orientation to get a good RA. The values are: D = 1 (yes). D = 0 (no)

The burden of courses. (CM). If the student considers that the courses taken by semester have been an excessive burden to get a good RA. The values are: D = 1 (Excessive burden) and D = 0 (no).

Age. (ED). The assumption is that the age at the enrollment at the CUUAEMVM (new student), may have an effect on his/her RA. We consider three intervals: i) between 18 or fewer years old (ED1) and 22 years old or less (base category); ii) between 23 years old or less (ED2) and 25 years or less; and iii) (ED3) 25 years old or more.

Career selection. (EC). If the career choice was of his/her own. The values are: D = 1 (it was) and D = 0 (it was not).

Marital status. (EDOC). If this variable may interfere to the RA. The values are D = 1 (married) and D = 0 (single).

Career expectations. (EXC). If currently studying career meets his/her professional expectations. The values are: D = 1 (yes) and D = 0 (no).

Study hours. (HE). If hours of study after class –homework, investigation, and reports-, may influence the RA. We consider three intervals: i) between 0 (HE1) and 1 or less hour (base category); ii) between 1 or less hour (HE2) and 2 or fewer hours; iii) between 3 or fewer hours (HE3) and 4 hours; and iv) (HE4) 4 or more hours.

Labor. (LAB). If the time dedicated by the student to work may influence his/her RA. The answers are classified in the following intervals: i) (LAB1) 0 years (base category); ii) (LAB2) 1 year or less; iii) worked between 1 year or less (LAB3) and 2 years or less; y iv) (LAB4) less than 2 years to more than 2 years working

Retake courses. (MR). If the student has failed or retakes courses at least once. The values are: D = 1 (yes) and D = 0 (no).

Study option. (OE). If the UAEM was his/her first election choice. The values are: D = 1 (yes) and D = 0 (no).

Prestige. (PRE). If student is identified with the UAEM because of the school prestige: The values are: D = 1 (yes) and D = 0 (no).

Enrollment reason .(RAIN). If he/she decided by him/herself enrollment to the UAEM. The values are: D = 1 (yes) and D = 0 (no).

Location. (UBI). The transport from home or work site to the CUUAEMVM. The values are: D = 1 (if he/she lives/work close to CUUAEMVM) y D = 0 (no).

5. STATISTICAL ANALYSIS

The general average grade is the most common indicator to measure the RA (Cándido et al., 2009), it reflects the student's learning level (Cascón, 2000; Tonconi, 2010). According to Manzano (2007), the RA is understood as the result of the effort that the student put on the learning process and is showing the acquired abilities or competency; this was the meaning that we have given to the RA in this study: we use the general average grade of every student to measure his/her RA, therefore we distinguish between regular (no fail nor retake courses) or irregular (fail or retake one course at least). The general average grade in the universe of students was 8.2 (from 1 to 10), some careers as Actuarial science, Accounting, Law, Economics and International economic relations shown an over average grade, the others (Administration and Administrative computer applications) were under.

5.1 Model of analysis. Description of the variables

The 62% of respondents said yes to the Academic support received, the 38% said have not been received that. The students of Law evaluated with the highest (78 % yes), Accounting 40 % and Administration 37 %. Otherwise the students of Actuarial science (said have received less support/orientation), however, they obtained one of the highest general average grades. This finding is an indicator that the academic support/orientation may be or not an element to get a good RA because depends on the student's appreciation and the career. In UAEM, the "Programa Institucional de Tutoría Académica (ProInsTA)" (tutorial program), is addressed to reinforce the student's RA and overtake some learning difficulties.

We observed that the Burden of courses variable was not a problem for the students, in general, nevertheless a minority considered that burden as a problem. On base on that we consider a evaluated as excessive by the most of the respondents, which means that this element is not. Talking about the tutorial program, it is assumed as our own that the tutor is able to guide students through a specific area of knowledge where a student is having problems or get some support from a specialist, also the guidance is ruled by the related well to procedures, rules, study programs, common learning problems, activities and available facilities in the CUUAEMVM, to support the tutorial function and encourage the good RA (PROINSTA, 2006: 453).

The third explanatory variable was the Age at the first enrollment of students to CUUAEMVM, the category 18 to 22 years old was represented by the 84% of the respondents, and we did not find evidence of significance, therefore. Prior to the empiric evidence and according to Vargas (2001) –who considers that in some careers are significant differences among students due to the ages-, Galand et al. (2004) states that older students (in relation to the average age of one group in a course) affect negatively their RA, and the arguments of Malmstrom (1984) -who did not find evidence of predictive values-, we assumed that age may be a significant variable to negatively affect the student's RA. By career we found that from the total universe in this segment (301 students), the Law program accounts with 97 (32% of 301), 52 (17%) from Accounting, 47 (16%) from Administration, 41 (14%) from Economic International Relations, 40 (13%), from Administrative computer applications, 12 (4%) from Actuarial science and 12 (4%) from Economics. Vargas (2001) considers that in some careers are significant differences among students due to the age. Galand et al. (2004) states that older students -in relation to the average age of one group in a course- affect their RA in a negative way. On the contrary, Malmstrom (1984) did not find evidence of a predictive value.

Career selection. Our assumption was that the decision of the student to enroll in a career is commonly influenced by elements as the own values and expectations, also a material future benefit (employment and earnings) and other significant elements (Carpenter y Foster, 1977; Beyon; 1998). The statistical analysis showed that almost an 80% (272 students), said to have chosen the career by themselves, on the contrary, a 21 % (71 students) said have been influenced. The next explanatory variable is the Marital status. Malmstrom (1984) found that been single or married as well as been father/mother was a significant predictable, but less important than others, this seems to be a non-significant variable because most of the students said that the marital status has not affected their performance. Just as an example, let us consider that the 100% of students of Actuarial science said not been affected by their marital status

In relation with the seventh explanatory variable (Career expectations), Pike y Simpson (1996) -by using a structural model- found that RA and satisfaction at high-level studies are positively related. Therefore in this study 265 students (77 %) confirmed that the career that they are studying accomplishes their expectations of employment, professional development and achievements. On the contrary, 78 students (23 %) said not been satisfied.

The hours of study (after class) is the eight explanatory variable. Rojo (1999) considers that the effort and time invested by the student influence his/her academic results. Theoretically, while more time is dedicated to studying, a better RA is obtained, nevertheless is not clear if more time means 100% of it devoted to studying, we may be evaluating the result. In our study, it was found that most of the respondents are investing from one to two hours a day to study after class. Another group –minority- said to study from three to four hours and the lowest number of respondents said to study more than four hours. We expected that the answer to "una a dos horas de estudio" and "menos de una hora" -both dichotomy variables- had some kind of incidence in the RA. As it was mentioned, the more significant was "una a dos horas de estudio"

The "ideal student" profile is: dedicated to the study, not working because of economic needs or other reason, is not desirable to losing time in other activities different to academic activities. If the problem is economic it could be solved by scholarships, however, they could not be benefited by the acquisition of abilities and experience obtained in the work field (De Garay, 2001; Guzmán, 2004; Carr et al., 1996; Béduwé y Giret, 2004; Planas y Fachelli, 2010). Regarding this topic, we considered important to include in our study a "Labor" variable. Analyzing the results we found a decrease of the number of students working after one year and a considerable decrease in the "working after two years category". Studying while working needs a constant effort, the student must be more organized, methodical and disciplined. The retake courses may influence directly on the good RA. We found that the most of the students were "irregular" (214) or 62 % -have failed or retake at least one course-, the others were regular (not one course failed or retaken) and from these ones we expect a better performance because they are entirely devoted to study.

Regarding the Study option explanatory variable, 187 respondents (54.5%) said that the career they are studying was their first option. The 45.5 % (165 students) said the opposite. The careers Administrative computer applications, Law. Accounting and Administration were the student's first option. The others (International economic relations, Economics, and remarkably Actuarial science), were in the opposite. Frenay et al. (2004), found that a cause of that decision was the "taking decision before" which means to analyze the academic program and other elements prior to enrolling. A 40% of students said that they decided some days before enrollment and a 64.3% said that they would like to study another career. The Prestige means identity with UAEM, 295 (86% of 343) students said to be identified with UAEM.

The Enrollment reason explanatory variable reflected that the decision was made by 317 students (92% of 3431), they had not been influenced to decide. According to that, it was expected a better RA. Finally, the Location explanatory variable indicates that the transport from house/work site to CUUAEMVM has an indirect relationship with the performance. Nevertheless, we found that 226 students (66 %) said not been affected by that element (transport). As a comment let say that in the questionnaire we did not mention distance in neither kilometers nor elapse of time. The interpretation of the mentioned is that the distance and time spent in transport to CUUAEMVM may be a problem reflected in stress and tiredness affecting the performance

6. MODEL RESULTS.

Some of the explanatory variables analyzed have some categories (i.e. study hours) reason why the total variables analyzed were seventeen instead of thirteen, from them only six were statistically significant. In the Table 2, we may observe that the coefficient of R-squared is low (0.19), however, this does not affect the applicability and fitting of the model. This means that the RA is explainable as far as a 20% by the significant explanatory variables. The Durbin-Watson (DW) test delivered a 1.8. indicator. A new analysis using an adjusted model with new variables may give us more information to explain the RA. Ravelo (2013) analyzes the relation among the RA and the demographic and socio-affective elements. His findings showed that the performance of students is explained by gender and socio-economical status but not as a whole. Vargas (2014) considers that the RA is a highly complex and multiple cause element, emphasizing the institutional, educational and psychosocial factors associated to the RA. De Garay (2014) is focused on the knowledge of students by searching who they were and what they did while studying a superior education level, in both inside and outside the university site, his study establishes conditions to design and implant institutional policies to reduce the high desertion rates and increase the rate of graduate students and especially to bring up more professional people to have a productive work life. The results of the model are shown as follows:

Table 2. Dependent variable: RA.

Variable	Coefficient	Std. Error	t-statistic	Probability
Explanatory Variables				
C	8.35	0.18	47.14	0.0000
AA	-0.004	0.061	-0.06	0.9530
CM	-0.14	0.08	-1.77	0.0778
ED2	-0.02	0.09	-0.23	0.8215
ED3	0.20	0.20	1.01	0.3122
EC	0.13	0.08	1.68	0.0942
EDOC	0.11	0.09	1.26	0.2083
EXC	-0.13	0.08	-1.70	0.0906
HE2	0.19	0.08	2.44	0.0152
HE3	0.18	0.09	1.97	0.0494
HE4	0.15	0.14	1.08	0.2820
LAB2	-0.05	0.11	-0.46	0.6462
LAB3	-0.005	0.12	-0.04	0.9692
LAB4	-0.14	0.12	-1.14	0.2569
MR	-0.40	0.06	-6.65	0.0000
OE	-0.04	0.06	-0.66	0.5099
PRE	-0.06	0.09	-0.60	0.5475

(General Average Grade).

RAIN	0.06	0.11	0.53	0.5965
UBI	-0.03	0.67	-0.51	0.6133
# of observations 343				
R ² = 0.19				
D. W. = 1.80				

Note: The base categories are: ED1 (between 0 and 1 hours of study after class); and LAB1 (students without a labor experience). (between 18 and 22 years old); HE1

6. 1. Academic variables

The academic variables are those related with the student and his learning and the university study environment, they are Academic support (AA), Burden of courses (CM), Career selection (EC), Career expectations (EXC), Hours of study (HE), Retake courses(MR), Study option (OE), Prestige (PRE) and Enrollment reason (RAIN). The burden of courses was statistically significant with an acceptable level of negative coefficient of 14%. As it was supposed to find, the results showed a slight negative relation between the burden of courses and the RA, otherwise, more courses as a study burden increase the probability of negative variations on the RA, then should be desirable adjust the burden of courses taken by a student in one scholar cycle.

The observed in the reported figures does not indicate the need to adjustment but the influence on the RA, which is the fact to demonstrate. The career selection was also statistically significant with a positive coefficient of 13% -however, we anticipated a negative-, and a roundly 10% of significance level. The 13% indicates a slight positive relation between the RA and the career selection, the probability of a favorable RA studying the chosen career is of 13%, otherwise the career selection do not influence in a high magnitude the RA. The career expectation is statistically significant at a negative coefficient of 13%, the meaning of this is that the RA is affected by the career expectation but in a low level, in other words: the professional expectations of the student regarding his career influence slightly the RA, which means an inverse relation between RA and career expectations, in other words, in case of the career does not accomplish professional expectations, that is not a high incident factor for the RA.

As it was said before, the daily study hours after class were classified into four categories, being H2 and H3 the statistically significant variables, we expected that the study hours show significant values as relevant to the student's RA. The H2 variable (between one and two hours), showed a 99% level of significance, this positive coefficient reflected a direct relation between the RA and H2, being 19% the probability that having that study hours the student's RA will improve, also the H3 category (three to four hours), was significant at a 95% level, the coefficient was positive and the probability of 18% to obtain better results in the student's RA studying three to four hours after class. These results (H2 and H3), reinforce the assumption that the study hours are important to a better RA. Focusing on the combined probabilities of H2 and H3 variables (37%), may be assumed that is expected a positive effect on the RA, studying between one and four hours after class.

Another finding is that more than four hours of study after class do not impact the RA significantly, one explanation of that is the low percentage (5.5%) of answers in the questionnaire to this category. The variable Retake courses is also statistically significant at a ninety-nine level. The negative coefficient is -40% which means that the effect of retake courses should be negatively affecting the RA at the probability of 40%. Our assumption was in the same direction, the results confirm our initial concern, based on that we consider necessary in a further investigation evaluate the factors around the reasons of retake courses, the possible causes, and the possible solutions, among those is the high index of failing courses, and the burden of courses in a scholar cycle. As a hint, we found that a combined probability of retake courses and an excessive burden 54%, -that is really high- affects the student's RA.

The non-significant variables are also important because showed that in our case the Study option (career), does not influence the student's RA, the same is applicable to Prestige, because the identity student-university is not important for the RA, the same assumption is valid to the Enrollment reason variable, otherwise is not important to our study if the student has decided or not to enroll by his/her own decision. Finally the variable Academic support -against our assumption- was not relevant. These non-relevant variables address our interpretation of results to consider the RA of the students at CUUAEMVM as a result of internal factors more than others belonging to the person, as a sample let say that the academic support is not reflected as a significant level in the RA, the same comment is suitable to the other non-significant variables. After considering the previous results, we assume that these variables must be tested in a different study considering another set of variables.

6. 2. Socio-demographic variables

There are three socio-demographic variables analyzed in this study: Age (ED), Marital status (EDOC) and Location (UBI). It was assumed that all were important to the RA. The age was divided by two categories. ED2 (students between 23 and 25 years old), and ED3 (25 years old or more), both were not statistically significant according to the regression analysis and consequently are not influencing the RA. Our assumption was that those two variables will have a significant effect on the RA, considering that older students and/or married may have personal conditions different to the others that could affect their RA. The importance of the results is that the neither the marital status nor age influenced the student's RA. The Location was not significant. The assumption was that the transport and the time along house/office to the CUUAEMVM would affect the RA of students. The regression analysis showed that the location is not relevant to support our assumption.

6. 3. Economic variables

One of these variables to be analyzed is Labor which was classified in four categories: the base category plus LAB2, LAB3, and LAB4. None of the mentioned was statistically significant as a result of the regression analysis. Our assumption was that this factor may have a significant negative relation and impact on the student's RA because the student will be sharing his/her time between the work and study hours and therefore will not be totally devoted to study, in the event of the situation "the student worked less than a year" tested in the study, we did not find relevance, the same results delivered in the other cases ("the student worked between one and two years" and "more than two years") from where we assume that Labor activities of the student do not influence his/her RA

7. CONCLUSIONS

From the econometric analysis, we found that six from nine academic variables were statistically significant. The retake courses, the burden of courses, the career selection, career expectations and the study hours influence the student's RA. Regarding the retake courses and the burden of courses, there is a high combined probability of 54% to affect negatively the student's RA. A positive effect on the student's RA is observed in the combined probability of the study after class hours in the intervals: one to two hours and two to three hours, which is 37%.

We can underline that the problematic of the RA in the students of CUUAEMVM is more influenced by internal (academic) variables than external or out of the scope of this academic site, basically we consider that the focus of the CUUAEMVM related to the academic performance improvement of the students would be centered in the academic variables, defining the academic-educational policies, basically focused on retake and burden courses to decrease the reprobation indicators.

The socio-demographic and economic variables -against of our first assumption- do not let us explain de RA, the age, marital status, and labor results, gave us evidence of that showing a low probability to affect the RA. Other variables were tested to search about their effect on RA, the academic support, study option, prestige, reason of enrollment and ubication were not relevant to explain the RA. We expected that the academic support -due to the importance of that in the learning process- were a significative variable of incidence in the RA, however, we observed that academic support is a subjective interpretation of the student which address our mind to evaluate -in further investigations- the effectiveness of the tutorial programs on the student's RA.

Finally we can sustain that the RA is more related to the CUUAEMVM internal facts than the external (student and environment) problematic, so, the RA is based on the educational policies ruling the academic performance in the CUUAEMVM, and the actions to do to analyze the retake courses, the high level of failing in a course and the burden of courses in a semester, which have been evidentially, the more significant relation affecting the RA. The study hours after class are more related to the student's strategy to learn, so, a better or less RA will depend on the student's decision and needs.

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