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Does the Economic Crisis have an influence on the Higher Education dropout rate?

Graça Leão Fernandes & Margarida Chagas Lopes

Abstract:

This research aims to identify the possible effects of the economic crisis on higher education (HE) dropout rates at ISEG- Lisbon School of Economics and Management - Universidade de Lisboa, after having controlled for the following objective dropout factors: individual characteristics; family background; own situation regarding employment and family; and High School and HE trajectories. Our main hypothesis is that the economic crisis has lowered parents' and students' ability to finance HE, thereby inducing higher dropout rates.

We are also interested in knowing whether non-traditional students have been more severely affected by the economic crisis than traditional students. Non-traditional students are defined as being: students over 25 years old or not born in Portugal or not Portuguese citizens or not single or employed. The number of non-traditional students at ISEG does not allow us to go as deep into the statistical analysis of this group as we do for traditional student. The research emphasises that, in the context of the generalised European crisis, it is of utmost importance to consider the social and economic factors that cause student dropout, as well as the effects

of universities' decisions, in particular those regarding Government support policies for educational development.

This study is grounded on the integrated explanations for dropping out in HE which are influenced by the objective determinants, which combine Tinto (1975) and followers, Bean (1982), and Cabrera et al. (1992, 1993). Our interest in non- traditional students obliged us to analyse the more recent literature about this group of students (Gilardi & Guglielmetti 2011). Our analysis of the effect of social economic background, both familiar and global, and of the recent economic crisis, mainly follows the research of Rumberger (2013) and Lynch (2015).

To analyse the impact of the economic crisis on dropout rates, we use longitudinal data from the ISEG data base, with information about students' characteristics and their families' socio-economic background, and apply statistical methodologies such as Chi-square tests for independence, and t-tests for the equality of means and proportions.

Our main results point to the fact that the economic and social crisis has significantly affected the dropout rate of Portuguese students, both traditional and non-traditional ones. Among ISEG Students, the traditional students' dropout rate is not significantly different from that of non-traditional students, but when we break the results down by period (before the crisis and during the crisis) there are significant differences. Dropout during the crisis period spared neither younger students nor those with better High School trajectories. The same is true for

non-traditional students. Moreover, during the crisis period, Portuguese students, both traditional and non-traditional, dropped out earlier during their HE trajectory, most cases being when they are still in the first year of their degree studies.

Although this research is specific to a particular HE institution in Portugal, we believe that its conclusions can be extended to the general European crisis context. We stress the idea that social, economic and political context should be taken into account in the dropout analysis model, together with university and student behaviour determinants.

Key words: Economic crisis, Higher Education dropout, social and economic factors, non-traditional students

Introduction

This research aims to identify the possible effects of the economic crisis upon higher education (HE) dropout rates for traditional and non-traditional students at ISEG – Lisbon School of Economics and Management – Universidade de Lisboa, after having controlled for the following objective dropout factors: individual characteristics, family background, own situation towards employment and family, and High School and HE trajectories.

Our main hypothesis is that the economic crisis has lowered parents' and students' ability to finance HE, thereby inducing higher dropout rates. The research emphasises that in the context of the generalised European crisis, it is of utmost importance to consider the social and

economic factors behind student dropout, as well as the effects of university decisions, in particular those regarding Government support policies for educational development.

In countries affected by an economic crisis, such as the southern European countries, of which Portugal is an example, their financial situation is certainly one of the factors that affects dropout rates, as fees are generally high and Government support through scholarships and other kinds of social support becomes increasingly less with the onset of the economic crisis. Besides, the economic crisis has largely affected the socio-economic condition of students and their families, which, in these countries, contribute heavily for the HE of their children.

This is a new research subject in Portugal, as previous research studies dealt almost exclusively with the psycho-social characterisation of students dropping out from a given University (Almeida et al. 2008; Vasconcelos et al. 2009), or compared dropout experiences among Portuguese HE institutions (Mendes et al 2009), without taking into consideration both the university and socio-economic effects in the context of an economic crisis.

To the best of our knowledge, the only previous study on the economic and social conditions of Portuguese HE students was carried out by the Ministry for Education, which dates back to 2005 (Martins, Mauritti & Costa 2005). This study does not establish any clear link between students' conditions and dropout rates. More recently, university information about dropout rates provided by the General Directorate of Higher Education (DGEEC) has been limited by its use of sectional data. A very recent DGEEC study (Queiroz 2015) regarding the influence of economic factors (not necessarily induced by the crisis) on dropout does not consider dropout

at the beginning of the HE trajectory. An exception to the above is DGEEC (2012-2013); however, this does not include the effects of the economic crisis on dropout rates. In our study, we overcome these limitations by using longitudinal data, which enables us to identify those students that dropped out during, and after, their 1st year of HE.

We focus on the ISEG dropout as an event analysis (Education Week 2011), on account of the very robust database that exists at this university. Among the sample of students, 17.3% are classified as non-traditional, according to our definition, which follows Gilardi & Guglielmetti (2011) and Doutor et al. (2013). The number of non-traditional students at ISEG does not allow to go as deep into the statistical analysis of this group as we do for traditional students.

In this paper, we only consider the objective determinants of dropout. Subjective determinants, such as: students' expectations; motivation; perceived work effort; commitment; evaluation of the interest and quality displayed by classes and teachers, amongst others, have all been analysed in previous research (Chagas Lopes & Fernandes 2011), and are thus outside the scope of our research.

To analyse the impact of the economic crises on dropout, we use longitudinal data from the ISEG data base, with information on students' characteristics and family socio-economic background and apply statistical methodologies, such as Chi-square tests for independence, and t-tests for the equality of means and proportions.

Our main results point to the fact that the economic and social crisis has significantly affected Portuguese students' dropout rates, both for traditional and non-traditional ones. Among ISEG Students, the traditional students' dropout rate is not significantly different from that of non-traditional students, however, when we break the results down by period (before and during the crisis), there are significant differences. Dropout during the crisis period spared neither younger students nor those with better High School trajectories. The same is true for non-traditional students. Moreover, during the crisis period, Portuguese students, both traditional and non-traditional, dropped out earlier during their HE trajectory, most of them when they were still in the first year of their degree studies.

This result is in line with the conclusions of the research entitled *Perfil dos Estudantes do Ensino Superior em Portugal*, (DGEEC 2012-2013 b), which found that around 11.8% of students in the 1st year of their HE trajectory in 2011 had dropped out from HE in 2012.

Although this research is specific to a particular HE institution in Portugal, we believe that its conclusions can be extended to the general European crisis context, and stress the idea that the social, economic and political context should be taken into account in the dropout analysis model, together with institutional and student behaviour determinants.

This paper is organised into the following sections:

Section 1 states the Portuguese educational context and briefly characterises Portuguese HE in the European context and the Government educational support policies, with some references to non-traditional students. Section 2 reviews some of the most significant approaches to

dropout determination in higher education, mainly, recent approaches regarding the effects of the crisis on dropout, and theoretical research on non-traditional students dropout are also reviewed. Section 3 presents the data and methodology, whilst Section 4 shows the main results and Section 5 relates the discussion and conclusions.

Section 1: Portuguese educational context

Portuguese HE is characterised by some important features. OECD data show that, in 2012, the entry rate in tertiary type A in Portugal stood at 64%, compared to 56% as an average for the EU-21, and 58% for the OECD. Nevertheless, the percentage of first time Portuguese graduates in the above programmes was only 41% for the same year, and the average graduation age was 26 years. About 6% of graduates were more than 30 years' old (OECD 2014). These outcomes clearly point to the existence of a very severe rate of loss during Portuguese HE Type A trajectories. Obviously, dropout is not the sole factor responsible for this loss, as the tertiary education system is also characterised by a very high failure rate within the academic trajectory. However, taking into account that the average graduation age, which corresponds to the above 41%, is 26 years old, we conclude that consecutive failure by students within their academic trajectory has been partially taken into consideration.

According to the EC (2012), Portugal and Spain were the only two European countries to register a decrease in the number of HE students (-1.5% and -0.2% respectively), whereas the

EU mean increased by 22%. Among the EU 27 countries, Portugal has also shown the lowest percentage of graduates and the highest dropout and failure rates in H.E. ¹.

Dropout data based on students' answers for the reasons why they dropped out, collected at ISEG between 1999–2003, show that dropout for economic and financial reasons has been increasing in recent years, according to students' perceptions.

Government support to access and progress in education, and especially in HE, mainly in the form of scholarship grants, has always played an important role in Portuguese society. As a result of the political commitment to the policies of "the Troika", and also the consequent restrictive measures imposed on the public budget, the Portuguese Government approved severe pro-cyclical measures, which included drastic cuts in HE scholarships and grants (e.g. between 2010 and 2012, the number of HE scholarship holders decreased by 21%) (PORDATA).

These restrictive public measures had a significant effect on the already weak ability of students, both traditional and non-traditional, and their families to finance HE, which must surely have contributed to increasing dropout rates during the crisis period. Our study is the first attempt to approach this issue.

Section 2: Theoretical Background

Past research on objective dropout factors, such as that of Bean (1982), Cabrera, Casteneda, Nora & Hengstler (1992; 1993), Tinto (1993), and more recently, Laing & Robinson (2003),

¹ OECD (2014). *Education at a Glance*.

Burrus & Roberts (2012), Sacristàn-Díaz et al (2013), have all considered individual characteristics (e.g. age and gender); family background (father's and mother's school and skill levels and employment and occupation); own situation regarding employment and family; individual previous school trajectories (the number of failures during High School trajectory and average mark at the end of that school level; HE trajectory (major, curricular year, number of credits/ECTS completed before dropout, average grade obtained at the moment of dropout).

Among other individual characteristics, gender and age have been highlighted in the literature on academic success and failure (Levin 2006). Most studies stress that women are better students: they generally have better marks, face fewer retention episodes and display higher completion rates than male students of the same age and school levels (Tinto 1975; Davies & Guppy 1997; UNESCO 2014).

In addition, some studies conclude that older students have a higher probability of dropout (Mc. Neal 1995; Laing & Robinson 2003), and that this probability increases with a school trajectory marked by failures. As educational achievement tends to become self-reinforced, such students face lower prospects of success once they are in HE. Such a situation mainly affects students who are already in paid employment and/or are raising their own family and, as a general rule, non-traditional students (Cabrera et al. 1993; Laing & Robinson, 2003; Gilardi & Guglielmetti 2011; Doutor et al. 2013).

Fathers' and mothers' "scholarly capital" have also been systematically addressed in the literature on school success, failure and dropout. Most of the studies state that, in general,

parents with higher school achievement tend to provide better study funding and environment conditions for their children, and have higher expectations for their children's academic achievement. Highly educated parents also play an important role as good examples for their children's scholarly success. (Cabrera et al. 1993); Balfanz & Letgers 2006; Burrus & Roberts 2012).

Research about the impact of the economic crisis on dropout points to the fact that parents' education level may be even more important in a crisis context. The human capital hypothesis that there is a link between HE completion and better job and income conditions is no longer true, as some of those better endowed families are now suffering from unemployment and loss of income due to the austerity measures. This situation may have a negative impact on their children's HE trajectory, inducing dropout. Obviously, the effect becomes even more severe for families with lower incomes and probably lower school levels (Orr et al. 2011; Rumberger 2013; Lynch 2015).

Better educational trajectories tend to become self-sustained. In other words, students with better average marks, and without failure episodes during their previous school trajectory, namely in High School, are usually more motivated and committed when in HE, which contributes to a more efficient transfer of knowledge. Although commitment and motivation are classed among non-objective factors behind school success or failure, associated successful trajectory can be used as an objective determinant, using High School average grade and number of failures as proxies. This is even more true if the study programs in HE allows for a better integration/use possible of prior learning (Kuh et al 2005; Dierdorff et al 2011). An

efficient previous school trajectory increases the probability that a student will be placed in their first choice of university and study program, therefore increasing levels of commitment and motivation. Students who are successful at previous school levels join higher education at a lower age, which reduces the probability of facing employment and family barriers, which are among the main determinants of dropout in older ages.

However past research also stresses that dropout events are frequently rooted in decisions that were taken long before the moment the dropout actually takes place. Balfanz & Letgers (2006) refer to the need for a thorough follow up of students before they enter HE, in order to prevent academic dropout. Burrus & Roberts (2012) found that the intention to drop out of HE very frequently begins during High School. They estimate that the average time interval between the conception of this intention and effective dropout is 1 to 3 years. This is why longitudinal or semi longitudinal information about students' trajectories is so important. The analysis of dropout among non-traditional students also benefits from this methodology, as long as interruptions between High School and HE have been recorded.

Some of the most important objective determinants of dropout in HE can be identified within students' HE trajectories. Systematic absenteeism from classes and examinations, low average grades and few completed credits are often presented as the leading indicators of the risk of dropout (Sacristán-Díaz et al. 2013; Burrus & Roberts 2012). The impact of these determinants needs to be completed by an analysis and follow up of student performance in the most "critical" course units, or, in other words, those with higher failure rates, in order to ascertain

whether the leading reason for low success has to do with a lack of basic knowledge or skills, or insufficient commitment to study, demotivation or a combination of these factors (Balfanz & Letgers 2006).

A major issue for today's HE strategies concerns the increasing heterogeneity among students within the same tertiary education institution, due to the increasing national and international mobility of HE students and the growing number of non-traditional students, who frequently have family and employment commitments. This heterogeneity challenges previous methodologies used for dropout analysis. To mitigate some of these difficulties, some authors advise previously grouping more homogeneous students according to the above objective determinants, in order to break down dropout research accordingly (Burrus & Roberts 2012; Muller & Schneider 2013).

Section 3: Data and Methodology

As previously referred to, in this paper we use ISEG's database, which provides rich information about the characterisation of dropout. This database has information about:

- Individual characteristics of students (at the moment of their first enrolment at ISEG) - gender, age, country of birth, nationality;
- Family background (at the moment of their first enrolment at ISEG) - fathers' and mothers' school and skill levels, situation regarding employment and occupation, which can be taken as proxies for family income or social status;

- Own situation towards employment and family;
- Previous scholarly trajectories - number of failures during High School and average grade at the end of it;
- Higher education trajectory at ISEG - major, curricular year and number of credits/ECTS completed before dropout, average grade at the moment of dropout.

We consider students who were enrolled at ISEG for the 2007/08 and 2008/09 Academic Years, as being the 'before crisis population', and those who were enrolled during 2010/11 and 2011/12 as being the 'crisis population'. Our population has 1,230 students from the first population, and 1,241 from the second one, of which 287 and 106 are respectively non-traditional. For the purposes of our study, as the ISEG data base has a semi-longitudinal nature, we are able to follow students' trajectory since their first enrolment and thus define dropout if there is no enrollment for two or more consecutive years. This criterion resulted in 373 students being selected for the study: 111 traditional and 45 non-traditional in the 1st period and 165 traditional and 23 non-traditional in the second.

We then created a variable 'Period', which takes value 1 for the before crisis period and value 2 for the crisis period, and we crossed it with variables characterizing the student (gender, age), family socio-economic background (father and mother school levels, their situation towards employment and occupation), individual's previous schooling trajectory and their HE trajectory before dropout.

The ISEG database only displays father's and mother's education and skill levels and their situation towards employment and occupation at the time of their child's first enrolment at ISEG.

We select the students who dropped out, and then divide them into two groups: traditional and non-traditional.

For both groups, we apply crosstabs between the variable period and all the other variables. These crosstabs give us the proportion of dropout for each of the variables categories [Appendix 1] by period, and the results of *chi-square tests* for independence and correlation coefficients, which tell us whether the relationship between the variable period and each of the other variables is significant, or not. We also carry out *z-tests* for equality of dropout rates, before and during the crisis, for discrete variables (family socio-economic background, number of retentions during High School, major and curricular year) to confirm whether there is a significant difference in dropout rate by period for each of the variables categories; and also *t-tests* for equality of means for continuous variables - High school average grade and HE average grade and number of ECTS, in order to find whether the mean differences are significant. In all tests, we take 5% level of significance.

In order to control for student heterogeneity, we follow Burrus & Roberts (2012) and Muller & Schneider (2013), and group dropout students into two profiles, according to the following dimensions:

- Students' previous school trajectories namely during High School;
- Students' school trajectory in Higher Education (before dropout).

To analyse the first dimension, we consider two groups: Group 1, which includes all dropout students with 1 or more failures during High School, with a corresponding global grade lower than or equal to the respective mean value; and Group 2, which includes those dropout students without failures during High School, and with a corresponding global grade higher than the mean value.

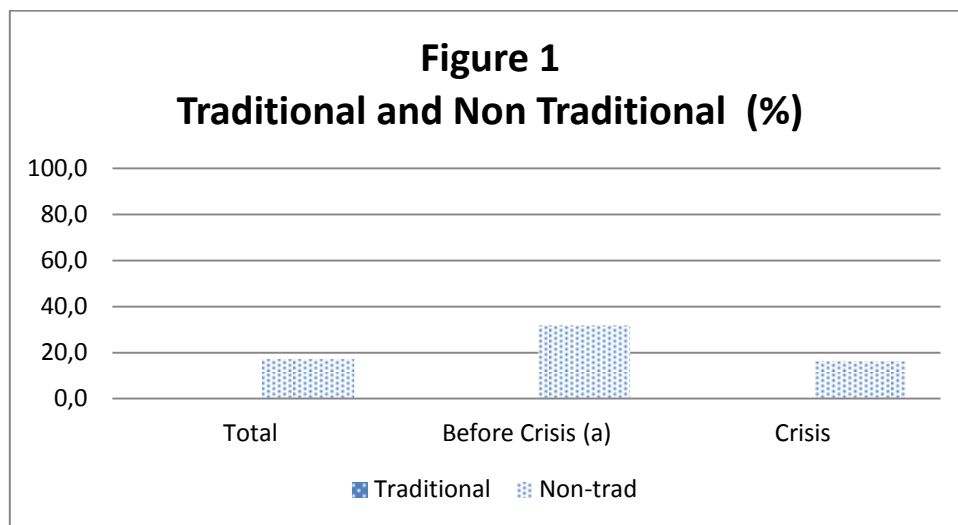
For the analysis of the second dimension, we consider two groups of students: Group 1, which includes dropout students who had accrued a number of ECTS and a higher education global grade lower than, or equal to the mean; and Group 2, which includes dropout students who obtained a number of ECTS and a higher education grade higher than the mean. We then analysed independence and equality of dropout rates before the crisis, and during the crisis, for each of the four groups. This analysis concerns only traditional students, as we do not have enough observations of non-traditional students to allow valid inferences.

Section 4: Results

Our population of dropout students is mainly composed of males (62.2%), aged 21 or less (26.8%), single (97.1%), and not employed (84.1%), mainly studying Economics or Management majors (33% and 44.2% respectively), who are mainly in their 1st curricular

yea(72.4%). In general, their fathers and mothers have completed a post-graduation (47.4% and 53.4% respectively), and are medium or highly skilled (82.9% and 90.6% respectively). Almost half (55.6%) of the fathers are employees, and 27.4% are self-employed. [Appendix 1].

Based on the broad definition of non-traditional students used here, these represent 17.3% of all students enrolled at ISEG for the periods analysed. We also observe a significant decrease of the proportion of non-traditional students during the crisis period, which could be the consequence of greater difficulties for non-traditional students in proceeding with their HE studies [Figure 1].

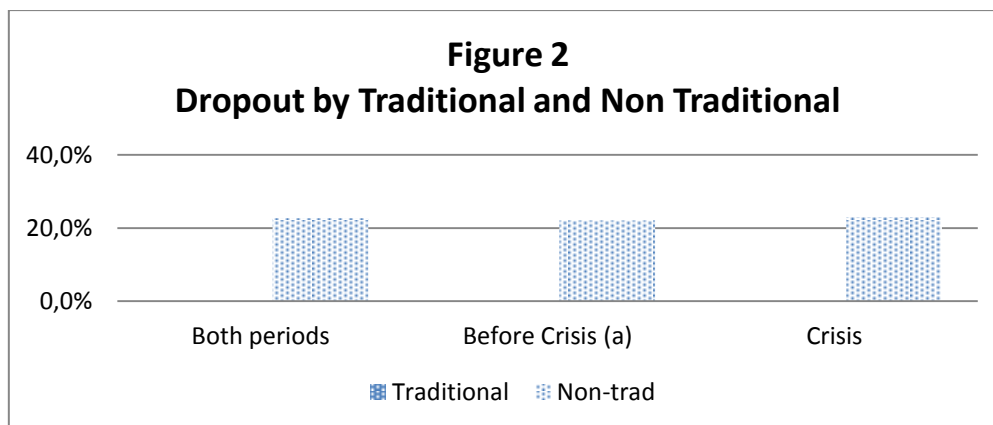


(a)The difference between the proportion of traditional and non-traditional is significant at 5% level.

4.1. Dropout characterisation for traditional and non-traditional students before, and during the crisis period

Among ISEG students, dropout rates of traditional students is not significantly different from that of non-traditional students, however when we break these results down by period, there are significant differences [Figure 2].

Before the crisis, the traditional students' dropout rate is significantly higher than that of non-traditional students, however, during the crisis period, the difference in dropout rates between traditional and non-traditional students is not significant, although the rate is slightly higher for non-traditional students (21.3% versus 18.4%) [Figure 2].

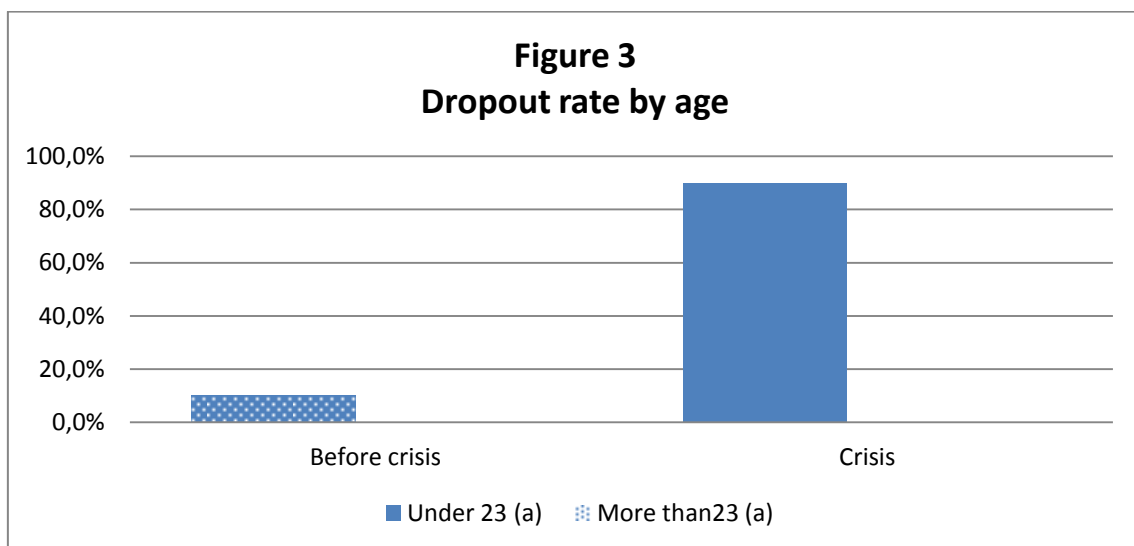


(a)The difference between dropout rate of traditional and non-traditional is significant at 5% level

The results of the effects displayed by the objective determinants of dropout on traditional and non-traditional students are presented, assuming the groups of variables defined in Section 3.

Among both traditional and non-traditional students there are no significant differences by gender in the proportion of those who dropout, irrespective of the period [Appendix 2].

Differences in the proportions of traditional students who dropout before or in crisis period are significant for both the group under 23 and with more than 23 years old. For the first group the proportion in the crisis period is much higher than before crisis (89.8% against 10.2%), for the second one the inverse occurred (13.8% against 86.2%) [Figure 3].



(a)The difference between dropout rate is significant at 5% level

Equality of age means of traditional students who dropout before and during crisis is rejected at 5% level. The mean difference is around 3 years (24 before, and 21 in crisis) [Appendix 3].

As students over 25 are classified as being non-traditional, it is not possible to undertake an analysis of the impact of age on these students.

There are no significant differences for mother's and father's educational or skill levels for the proportion of students who dropout, either traditional or non-traditional. However, the dropout rate for traditional students whose fathers were self-employed was much higher during the crisis period than before (34.6 versus 65.4) and the difference is significant. No valid inference is possible for non-traditional students [Appendix 2].

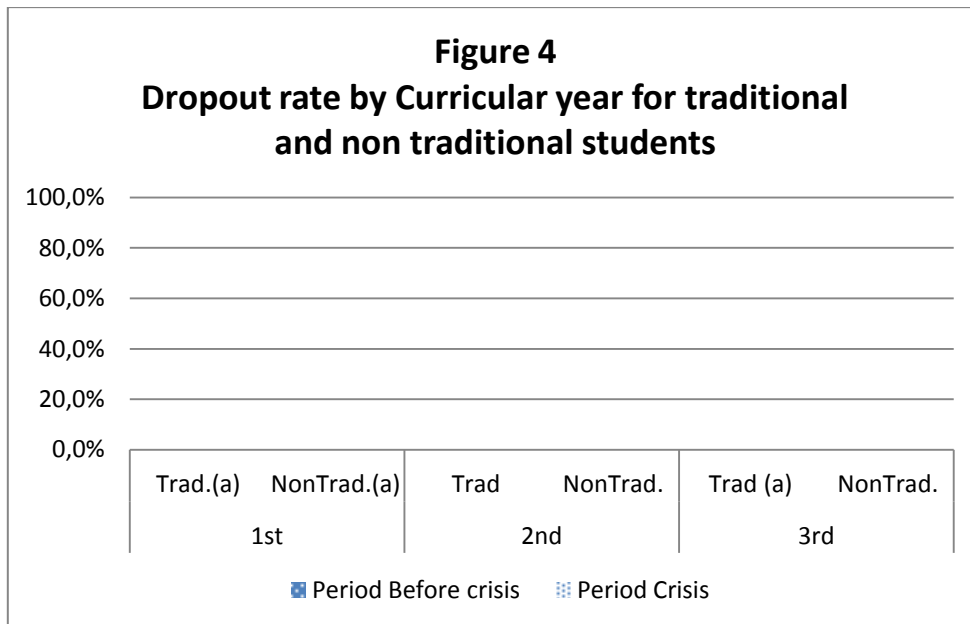
Independent samples test for equality of means, between the two periods, for traditional students who dropout, which shows that difference in the High School grade mean before, or during the crisis period is significant (p -value=0.001). The High School grade mean for those who dropout before crisis is lower than for those who dropout in the crisis period (150.37 against 155.96) [Appendix 3]. For non-traditional students no valid inference is possible due to the small number of observations.

The large majority of students in both periods had no failures in High School trajectory (85.1% and 95.7%). However, among traditional students with no failures there is a significant difference in the proportions of those who dropout before or in crisis (44.2% against 55.8%). There is no significant difference for non-traditional students.

The proportion of students without retentions and whose High School global grade was higher than the mean that dropout during the crisis is significantly higher than for those who did so before the crisis [98% against 88%, p-value=0.047].

Among both traditional and non-traditional students there are no significant differences by major for the proportion of those who dropout irrespective of the period [Appendix 2].

For traditional students who dropout, the percentage of those in their 1st curricular year increases significantly in the crisis period and decreases significantly for students in the 3rd curricular year. The same is true in an even greater measure for non-traditional students in their 1st curricular year but not for those in the second and third curricular years. For these ones there are no significant differences in the proportion of dropout before and after the crisis [Figure 4].



(a) Difference between proportions of students before and in crisis is significant at 5% level

The result of Independent samples tests for equality of means between the two periods show that the average grade at the moment of dropout mean and the mean number of ECTS completed by traditional students before and in crisis are significantly different. The means before and in the crisis period are 6.07 and 3.2 [p-value=0.000] for the average grade at the moment of dropout and 10.89 and 2.6 [p-value=0.024] for the number of ECTS completed. For non-traditional students difference in the average grade mean at the moment of dropout before and in crisis [7.73 against 3.1, p-value=0.002] is significant but the mean difference in the number of ECTS completed is not significantly different between the two periods.

Students who dropped out before the crisis had, as a general rule, a lower High School grade but a higher average grade at the moment of dropout, as well as a higher number of

completed number of credits than those who dropped out during the crisis period [See Appendix 3].

5. Discussion and Conclusions

The above results seem to indicate that the economic crisis had a severe impact on dropout, both for traditional and non-traditional students. Dropout rate increases significantly during the crisis period.

Contrary to the findings of previous research (Tinto 1975; Davies & Guppy 1997; UNESCO 2014), we do not find any gender effect on dropout rates, both for before or during crisis. Among both traditional and non-traditional students there are no significant differences by gender in the proportion of those who dropout, irrespective of the period.

The dropout rate of traditional students during the crisis period increases mainly for those aged 23 or less, which contradicts the findings of previous research [Mc. Neal 1995; Laing & Robinson 2003] in that dropout increases with age.

The influence displayed by parents' education and skill on dropout rates seems to be insensitive to the economic crisis. Does this mean that - in line with Bean (1982) - parents' education levels should no longer be taken into consideration as background variables? Or is the case that the crisis affected dropout rates, irrespective of parents' schooling and skill levels?

Previous research (Orr et al. 2011; Rumberger 2013; Lynch 2015) found that family income and employability levels are major determinants of dropout rate. We think that because the economic crisis has been breaking down the existing positive relationship between parents' schooling levels and their employability and income conditions, the former variable has possibly been losing its statistical significance as a student dropout factor. However, a more in-depth analysis is needed to obtain a robust answer to the above questions.

Taking into consideration the small number - at the time of enrolment - of unemployed fathers and mothers in the population analysed, we could not study the effect of the parents' situation regarding employment on dropout rates before, or during the crisis. However, we did find that the dropout rate for traditional students whose fathers were self-employed was much higher during the crisis period, than before. This could be due to a severe deterioration in labour markets brought about by the economic crisis, which led to entrepreneurs facing failure, and therefore precluded them from financing their children's higher education.

The economic crisis seems to have increased dropout rates among traditional students with good results in their High School trajectory. The difference in the proportion of students who successfully completed their course units at the first attempt and whose High School global grades were higher than the mean is significant.

The economic crisis has a clear effect on bringing forward the moment of dropout, both for traditional and non-traditional students. During the crisis, students drop out earlier in their HE

trajectory. During the crisis period, students' dropout rate during their 1st curricular year is 20 percentage points above the rate before the crisis.

As students bring forward the moment of dropout from HE, they are now obtaining a lower number of credits by the moment of dropout.

The lower HE average grades obtained by students who dropped out during the crisis period, when compared to those who dropout before the crisis, although they had generally performed better during their High School trajectories than those who dropped out before crisis, shows that their academic performance in HE trajectory was weaker. This is most probably due to the fact that by dropping out earlier in the HE trajectory, students who dropped out during the economic crisis did not have enough time to study for and complete less "critical" course units, than the ones in the syllabus of the 1st curricular year for most ISEG majors. As a result, traditional students are generally unable to compensate the lower grades generally obtained in the 1st curricular year, with higher grades in the following curricular years.

Notwithstanding, it is also possible that weaker expectations and motivation – which are related to high unemployment rates during the crisis period, even among those with a HE degree - could have played an important role in the poorer academic performances of students who dropped out during the economic crisis. This last hypothesis can only be rigorously investigated in the scope of research that encompasses the analysis of both objective and subjective determinants of dropout.

Summing up, our research produced evidence that the economic crisis has indeed contributed to significantly alter patterns which are already well-established in the reference literature, such as the supremacy of the female gender; the replacement of the educational capital of parents by the father's situation regarding employment; the increase of the probability of dropout for older students; the High School trajectory effect on HE trajectory as well as the changed school pathway pattern, due to the significant anticipation of the time of dropout in the higher education trajectory.

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Appendix 1 – Frequencies for students who dropout

| | | Frequency | Valid Percent |
|------------------------------|--------------------------|-----------|---------------|
| Gender | Female | 141 | 37.8 |
| | Male | 232 | 62.2 |
| Age Ranges | <=23 | 184 | 49.3 |
| | >23 | 189 | 50.7 |
| Civil Status | Single | 301 | 97.1 |
| | Married, divorced, Widow | 72 | 2.9 |
| Student employment situation | Not employed | 269 | 84.1 |
| | Employed | 51 | 15.9 |
| Degree | Economics | 123 | 33 |
| | Management | 165 | 44.2 |
| | Finance | 52 | 13.9 |
| | Applied Mathematics | 33 | 8.8 |
| Curricular year | 1 | 270 | 72.4 |
| | 2 | 66 | 17.7 |
| | 3 | 37 | 9.9 |
| Total | | 373 | |

| | | Frequency | Valid Percent |
|-------------------------------------|---|-----------|---------------|
| Father_Edu | Lower or equal 3 rd Cycle CE | 101 | 31.7 |
| | Secondary | 65 | 20.4 |
| | Post Second. | 24 | 7.5 |
| | Graduation or higher | 129 | 40.4 |
| Mother_Edu | Lower or equal 3 rd Cycle CE | 87 | 27.2 |
| | Second. | 62 | 19.4 |
| | Post Second. | 18 | 5.6 |
| | Graduation or higher | 153 | 47.8 |
| Father Skill Level | Medium or high | 141 | 82.9 |
| | Skilled | 26 | 15.3 |
| | Non-skilled | 3 | 1.8 |
| Mother_Skill Level | Medium or high | 155 | 90.6 |
| | Skilled | 10 | 5.8 |
| | Non-skilled | 6 | 3.5 |
| Father_Situation towards occupation | Employees | 188 | 50.4 |
| | Self_Employed | 103 | 27.6 |
| Total | | 373 | |

Appendix 2 – Chi-square tests of independence

| Pearson Chi-Square | Value | df | Asymp. Sig. (2-sided) |
|---|--------|----|-----------------------|
| Gender x Period | 1.566 | 1 | 0.211 |
| Age x Period | 158.69 | 1 | 0.000 |
| Degree x Period | 5.042 | 2 | 0.08 |
| Curricular Year | 14.746 | 2 | 0.001 |
| Father Edu | 0.755 | 3 | 0.86 |
| Mother Edu | 0.002 | 3 | 0.98 |
| Father Skill Level | 3.166 | 3 | 0.367 |
| Father Situation towards occupation | 5.934 | 1 | 0.015 |
| 0 cells (0.0%) have expected count less than 5. | | | |

Appendix 3 – Independent Samples Test for the equality of means

| | | Period | N | Mean | Std. Deviation |
|--------------------|---------------------------------|---------------|-----|---------|----------------|
| Trad. | Average grade at dropout moment | Before crisis | 111 | 6.07 | 6.087 |
| | | Crisis | 165 | 3.2 | 5.368 |
| Students | ECTS | Before crisis | 228 | 18.08 | 31.430 |
| | | Crisis | 337 | 18.05 | 28.323 |
| | High School Average Grade | Before crisis | 90 | 150.367 | 10.238 |
| | | Crisis | 71 | 155.958 | 10.612 |
| Non Trad. Students | Average grade at dropout moment | Before crisis | 45 | 7.73 | 5.887 |
| | | Crisis | 23 | 3.10 | 5.387 |
| | ECTS | Before crisis | 22 | 19.09 | 3.030 |
| | | Crisis | 19 | 4.42 | 19.271 |

Independent Samples Test

| | | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | |
|-----------|---------------------------------|-----------------------------|---|-------|------------------------------|--------|-----------------|-----------------|
| | | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference |
| Trad. | Average grade at dropout moment | Equal variances assumed | 27.309 | 0.000 | | | | |
| | | Equal variances not assumed | | | 4,018 | 215.60 | 0.000 | 2.865 |
| Students | ECTS | Equal variances assumed | 30.132 | 0.000 | | | | |
| | | Equal variances not assumed | | | 2.295 | 83,094 | 0.024 | 8.288 |
| | High School Average Grade | Equal variances assumed | 0.013 | 0.908 | -3.030 | 215 | 0.003 | -4.494 |
| Non Trad. | Average grade at dropout moment | Equal variances assumed | 2.619 | 0.110 | | | | |
| | | Equal variances not assumed | | | 3.248 | 48.095 | 0.002 | 4.630 |
| Students | ECTS | Equal variances assumed | 13.183 | 0.001 | | | | |
| | | Equal variances not assumed | | | 1.655 | 32.993 | 0.107 | 14.670 |