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"THE LEVEL OF EDUCATION OF YOUNG PEOPLE IN REGARDS WITH THE SOCIO-ECONOMIC SITUATION OF HOUSEHOLDS IN EU"

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Abstract

The relationship of socioeconomic status and school achievement has been the subject of many researches during the past decades. Although, it has been proved that there is a definitely positive relationship between socioeconomic conditions and progress in school, this study attempts to determine the exact factors that affect youngers' academic development and particularly the role of family background on this. Therefore, economic factors such as income inequality, GDP pc and poverty rate as well as social factors such as parental educational level, family structure and immigrant status are examined to highlight in which extent they influence the assessment of young people's education attainment and the risk of dropping out of school early. Specifically, through principal component analysis and cluster analysis we analysed the gathered data from OECD and Eurostat concerning 21 out of 28 members of European Union in 2009 and classified them into three groups of European countries. The results of this analysis indicate the undisputable role of socioeconomic status on youngers' educational achievement mainly through parental educational attainment and financial status as well as the significance of spatial and national characteristics of each country.

Keywords: academic achievement, socio-economic status, poverty, parental education, early school leavers, European Union.

Περίληψη

Η σχέση της κοινωνικοοικονομικής κατάστασης και σχολικής επιτυχίας έχει αποτελέσει αντικείμενο πολλών ερευνών κατά τη διάρκεια των τελευταίων δεκαετιών. Παρά το γεγονός ότι έχει αποδειχθεί ότι υπάρχει σίγουρα θετική σχέση μεταξύ των κοινωνικοοικονομικών συνθηκών και την πρόοδο στο σχολείο, η παρούσα μελέτη επιχειρεί να προσδιορίσει τους ακριβείς παράγοντες που επηρεάζουν την ακαδημαϊκή εξέλιξη των νέων και ιδιαίτερα τον ρόλο του οικογενειακού περιβάλλοντος σε αυτό. Ως εκ τούτου, οι οικονομικοί παράγοντες, όπως η ανισότητα των εισοδημάτων, το ΑΕΠ και το ποσοστό της φτώχειας, καθώς και κοινωνικοί παράγοντες, όπως μορφωτικό επίπεδο των γονέων, η οικογενειακή δομή και οι οικογένειες μεταναστών εξετάζονται για να διαφωτίσουν σε ποιο βαθμό μπορούν να επηρεάσουν το μορφωτικό επίπεδο των νέων καθώς και τον κίνδυνο εγκατάλειψης του σχολείου. Συγκεκριμένα, μέσα από την principal component analysis και cluster analysis αναλύσαμε τα δεδομένα που συγκεντρώθηκαν από τον ΟΟΣΑ και τη Eurostat σχετικά με 21 από τα 28 μέλη της Ευρωπαϊκής Ένωσης το 2009 και τις κατατάξαμε σε τρεις ευρωπαϊκές ομάδες χωρών. Τα αποτελέσματα αυτής της ανάλυσης δείχνουν τον αδιαμφισβήτητο ρόλο της κοινωνικοοικονομικής κατάστασης στην εκπαιδευτική επιτυχία των νέων κυρίως μέσα από το μορφωτικό επίπεδο των γονέων και την οικονομική τους κατάσταση, καθώς και τη σημασία των χωρικών και των εθνικών χαρακτηριστικών της κάθε χώρας.

Λέξεις-κλειδιά: ακαδημαϊκή επίδοση, κοινωνικοοικονομική κατάσταση, φτώχεια, μορφωτικό επίπεδο των γονέων, μαθητές που εγκαταλείπουν πρόωρα το σχολείο, Ευρωπαϊκή Ένωση.

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INTRODUCTION

Academic achievement has always been the centre of educational research. Despite varied definitions about the aims of education, the academic development of the child continues to be the primary and most important goal of education. Therefore, it is important to have a clear understanding of what benefits or hinders one's educational attainment. At the European level, coordination among education and training programs needs to be enhanced not only to stress the importance of tertiary education but also to focus on real acquisition of knowledge and labour opportunities for people from diverse backgrounds. The fact that the educational and labour opportunities are unequally distributed among individuals of varying socioeconomic status(SES), poses concerns and challenges in societies that pursue equal opportunity irrespective of socio-economic background.

Numerous studies have shown that the socioeconomic (SES) achievement gap is the main cause of inequality of students in schools and other educational systems (Bourdieu 1989; Carnoy 2007, Shavit and Blossfeld 1993, as cited in Doren, 2013). According to Battle and Lewis (2002: 21-35), the most significant reason of this finding is the fact that a person's education is clearly linked to their life chances, income and well-being. It is generally believed that children from high and middle socio-economic status parents are better exposed to a learning environment at home because of provision and availability of extra learning facilities. This idea is supported by Becker & Tomes (1979:1153-1189) when they assert that it has become well recognized that wealthy and well-educated parents ensure their children's future earning by providing them a favorable learning environment, better education, and good jobs. In contrast, the students coming from a low background are thought to be more depressed and more concerned about their financial problems resulting to a limited time for studying and other academic activities. This thesis attempts to provide some responses to the following questions: What factors promote achievement in students? In which extent is it possible to assess the influence of socioeconomic status of households on academic achievement of young people, reinforcing the intergenerational reproduction of inequality? Based on an empirical approach, this dissertation is mainly considering the existence and nature of the relationship between the households' characteristics and

educational inequality in the European Union's regions, highlighting how differences in households' features as well as in educational attainment affect educational inequality.

Another important question when examining educational inequality is related to the drop of education and training of young people. The phenomenon of early school leavers (ESL) is effectively an important question that requires a specific investigation. As mentioned by European Commission, there is no single reason for explaining such a fact and consequently there is no easy response. Moreover if early school leaving is often depending on the fragile socio-economic situation of the family as well as personal learning difficulties, the education system may also have an influence and contributes to explain while such a phenomenon is more or less frequent in some E.U. countries. If each country is responsible for its national education system, one of the most important objectives of the EU educational and training policy is to reduce the rate of early leavers from education and training aged 18-24 below 10% (European Commission, 2013).

The question of young people's education and training plays is a determinant factor for European growth and plays a key role in terms of reduction of unemployment, productivity and social cohesion. It is estimated that reducing early school leavers (ESLs) throughout Europe by just 1% would increase the number of qualified young people by half a million years every year, with a commensurate contribution to the GDP of those countries (European Parliament, 5 March 2012).In this context, we consider essential to examine in which extent the family's background impacts the number of ESLs across European Union as well as the exact policies and strategies that will contribute to reducing them. In other terms, admitting that family's socio-economic situation is one of the main reason means that policies aiming to improve the education level of young people must also include measures regarding the family's socio-economic situation.

Undoubtedly, education is an important driver of upward mobility in European Union. Therefore, it is really crucial to highlight the exact factors that affect child's educational attainment and particularly the role of family background on this. The objective of the present work is to highlight how it is essential to reduce socioeconomic inequalities, considering that countries with lower level of socio-economic inequalities are in most

cases characterized by a higher national education level, expressed in terms of percent of first-stage and second-stage tertiary education (ISCED5-6) as well as percent of early school leavers. In that way, researchers can determine whether or not current policies are benefiting students or if perhaps other policies would be more beneficial.

This study takes a holistic approach in order to analyze how the factors generally mentioned by the relative bibliography affect students' performance. Three groups of factors are examined: the economic ones such as income inequality, GDP pc and poverty rate and the social factors such as family's environment (parental educational level, family structure, and immigrant status)and finally school location (urban – rural areas).Two main sources of data have been selected: data from the Eurostat regional database and data from OECD and more especially data produced by its Programme for International Student Assessment (PISA programme), a trustful assessment tool around the world.

The structure of this thesis consists of four chapters. Through a detailed literature review, the first chapter presents the main factors that are generally considered to impact young people's educational attainment. The studies reported in this chapter relate to the European and worldwide educational system.

The second chapter is related to the detailed description of the data that have been collected and further analyzed. In particular, there is an attempt to highlight the importance of the data used as well as their way of calculation.

In the third chapter, there is an attempt to detect and evaluate the European spatial inequalities as regards educational attainment in order to examine in which extent the main economic and social factors selected in the previous chapter influence the assessment of young people's education attainment.

In the fourth chapter, we propose a classification of the 21 European countries for which it was possible to collect reliable and analytical data as regards educational attainment and socio-economic factors affecting this attainment. This classification concerned the year 2009 and is based on the successive implementation of factor analysis and cluster analysis. This statistical treatment has been realized through SPSS (Statistical Package for the Social Sciences).

It is then an aggregated analytical report of foreign and web references used for the elaboration of this thesis.

CHAPTER 1: THE ROLE OF FAMILY SOCIO-ECONOMIC STATUS ON YOUNGS' EDUCATION LEVEL

The objective of the present chapter is to proceed to an overview of the potential relation between the socio-economic status and the education levels of young people at individual and collective level. Through a systematic bibliographical review, we will try to detect and examine in which extent the different components of socio-economic status affect the access to the education system while emphasis is given to the risk factors of early school leaving.

1.1. Socioeconomic status: meaning and measurements

Socioeconomic status (SES) is a contextual variable widely used in educational research. Its contribution to the development of bibliography is undisputable. Many studies of valuable educational material would have not been investigated unless the variable of socioeconomic status had been used.

SES is a way of looking at how individuals or families fit into society using economic and social measures that have been shown to impact individual's health and well-being. Indeed, SES is a necessary part of this very active field of research. It is related to the social standing or social class. Nevertheless, studies involving children and adolescents reveal a continuous controversy about its conceptual meaning and empirical measurement in (Bornstein & Bradley, 2003).Several ways of measuring SES have been proposed but most measure SES through family income, parental education and occupational status. Specifically, many researchers argue that SES is the position of an individual on a social-economic scale that measures such factors as education, income, type of occupation, place of residence and in some populations, heritage and religion (Mosby's Medical Dictionary ,Elsevier,2009, 8th edition,).In other words, SES is the standing of a person or group in a community or society based on education, occupation and income, which is often used as a benchmark for investigating health inequalities (Segen's Medical Dictionary, 2012, Farlex, Inc.).Others authors, such as Mueller & Parcel, 1981, perceive SES as a socioeconomic index that describes an individual's or a family's ranking on a hierarchy according to access to or control over some combination of valued commodities such as wealth, power, and social status. Finally, according to the American Heritage: New Dictionary of Cultural Literacy, 2005, Socioeconomic Status is an individual's or group's position within a hierarchical social

structure. It is an arrow of variables including occupation, education, income, wealth and the place of residence and can successfully emphasize the privileges, the power and the control that an individual can exercise on a society (American Psychological Association, 2014).Thus, many sociologists use socioeconomic status in order to predict people's behavior. Consequently, it seems that family income, parental education and occupational status are the three common factors used by most scientists in order to measure socioeconomic index and conduct their investigations.

If SES is an individual characteristic with direct impact on life conditions and position in the society, it is also very important for the whole society due to the fact that SES consists of the lens of social class. SES is usually categorized into high SES, middle SES and low SES. A society of low SES including low education, poverty and poor health reflect a highly problematic society. Inequities in wealth and resource distribution and quality of life are born and increase uncontrollably. Focus in socioeconomic inequalities is of significant importance when it efforts to reduce such economic and social disparities. For this reason, many professional scientists possess the tools necessary to study and identify strategies that could alleviate these inequities at both individual and societal levels.

1.2. Education and SES: a strong relationship

Education is a concept that hides inside inconceivable forces. It is not just the procedure of learning mathematics and physics, even if such indicators are commonly used. Instead, it is considered to be a precondition for the development of healthy societies, societies of literacy and morality. It is a fundamental human right and the foundation for lifelong learning. In a world where technological advances have a leading role, education is the only way for a community to survive and progress. A literate community is a dynamic community. Illiteracy, however, is an obstacle to a better quality of life and can even breed exclusion and violence.

Learning is a continuous educational procedure playing the most important role in the spiritual development of an individual. The characteristic that makes education essential both for social and human development is its ability to transform lives. Education can change people's lives, their health, their wellbeing, their social attitudes and their civic participation. For individuals, education and literacy is the only mean to improve their

income, health and relationship with the world. Indeed, according to European Commission higher education is of great importance in the efforts to eradicate poverty and to promote inclusive growth. That's why EU provides support to higher education through initiatives such as education and training programmes for people all over the world[1]. It can affect positively individuals' self-image, enhancing their self-esteem and therefore strengthening their identity. Education gives them the supplies and qualifications to manage more effectively both their own personal domains of life and also in the community. According to Bynner, John, Schuller, Thomas, Feinstein, LeonWider, (2003:341-361) education is an absolute prerequisite for the promotion of personal well-being and a cohesive society.

On the occasion of the celebration of International Literacy Day, 8 September 2014, a ceremony that brought together political leaders and civil society organizations was held in Bamako, Mali, around the national theme "literacy, an essential step towards achieving long-term peace". Specifically, Lazare Eloundou, Unesco Representative for Mali, in reference to the message of the Director-General of Unesco, Irina Bokova, has said that "literacy is one of the key elements required to promote sustainable development, because it provides individuals with the tools to making the right decisions in the areas of economic growth, social development and environmental integration". Next, The Head of Cabinet and Representative of the First Lady of Mali, Mrs. Sidibé Adama Traoré, mentioned in her speech that:

> "……the royal road that gives one the possibility to acquire the "know-how-to-be", the know-how and better yet the knowledge is an opportunity for the global community to measure the results of all the efforts made for the fight against ignorance and obscurantism in our communities."

Finally, Mrs. Togola Jacqueline Nana, the Malian Minister of National Education added that:

> "……in recent years, our country has been faced with socio-economic and security troubles, which represent a major concern for all Malians. Solving these issues necessarily requires education in general and literacy in particular because there are around 68% of illiterate people in Mali, without whom all major social projects are often designed, discussed and adopted."

After many decades of scientific research, it seems that the role of education in the development of young people is just as important as the role of Socioeconomic Status.

[1] http://ec.europa.eu/commission/2014-2019/mimica/blog/all-children-education-offers-hope_en

Numerous researchers have examined educational processes, including academic achievement, in relation to socioeconomic background (Bornstein & Bradley, 2003, Brooks-Gunn & Duncan, 1997:55-71, Coleman, 1988:95-120, Mc Loyd, 1998:185-204).White (1982:461-481) was the first who reviewed the literature on this subject through a meta-analytic study focusing on studies before 1980. His aim was to investigate the relation of SES and academic achievement. Finally, he concluded that this relation varies significantly with a number of factors (the types of SES and academic achievement measures). Nowadays, these results differ from one research to the other: some of them such as Lamdin, (1996:155-162), and Sutton & Soderstrom (1999:330-338) argue that there is a strong relation between SES and academic achievement while others such as Ripple & Luthar (2000:277-298) and Seyfried (1998:381-402) conclude that the correlation is not sufficiently significant in order to admit such a relation.

Brooks-Gunn & Dunkan (1997:55–71), have supported that high SES families afford their children an array of services, goods, parental actions, and social connections which they exploit for their own benefit in contrast to many low SES children who cannot have access to those same resources and experiences. Eventually, low SES children are at risk for developmental problems. Consequently, students with more socioeconomic advantage are more likely to perform better than children with less advantage.

However, studies have not been limited on the above general results. Past reports focusing on minority children, indicated that socioeconomic advantage, including factors related to family income (or education background), exerts significant influence on academic achievement levels in minority children (Carter, 1984:4-13, Pelavin and David, 1977:4537-15). It is true that minority children who experience more socioeconomic advantage are typically found to academically perform better than students with less advantage. Achievement motivation has also been an important mediator of academic performance differences in school populations (Ford, 1992:196-211, Marchant, 1991). Geoffrey F.Schultz, 1993, confirms that achievement motivation is closely connected to stronger academic performance and appears to be significantly related to the effective use of intellectual ability in testing/achievement situations (Geoffrey F.Schultz, 1993). Bibliography adds that the same happens in minority children. Minority children exhibiting higher achievement motivation perform better

academically than students with lower achievement motivation (Broderick and Sewell, 1985:591-599, Cooper and Tom, 1984, Sewell and Price, 1991:259-314). However, recent surveys conducted by the National Center for Education Statistics (NCES) indicated that minority students lagged behind their White peers as far as academic achievement is concerned (U.S. Department of Education, 2000). According to the National Commission on Children, 1991, minorities are more likely to live in low-income households or in single parent families and their parents are likely to have less education. All of these factors are components of SES and linked to academic achievement.

It is not a coincidence that numerous studies have investigated that low SES including poverty and low parental education are associated with lower levels of school achievement and IQ later in childhood (Alexander et al. 1993:801–14 , Bloom 1964, Dunkan et al. 1994:296–318, Escalona 1982:670–75, Pianta et al. 1990, Walberg & Marjoribanks 1976:527–51, Zill et al. 1995).In 1999, DeGarmo and colleagues found that income, education and occupation are three indicators of SES that are clearly associated with better parenting which then affect school achievement and school behavior(DeGarmo1999:1231–45).More educated and advantaged parents also seem to have children with greater vocabulary skills and faster vocabulary growth during early childhood than less educated and advantaged parents (Arriaga, Fenson, Cronan & Pethick, 1998, Hart & Risley, 1995, Hoff, Laursen & Tardif,2002, Hoff-Ginsberg, 1991, Lawrence & Shipley, 1996, Ninio, 1980). Consistent with previous work, findings show that more talk, more diverse and complex talk, and limited use of directive utterances by parents is associated with larger vocabulary size in children (Arriaga et al., 1998:209–223, Hart & Risley, 1995, Hoff, 2003:147–160, Huttenlocher, Haight, Bryk, Seltzer & Lyons, 1991:236–248, Pan,Rowe, Singer & Snow, 2005:763–82). The high-SES children grew more than the mid-SES children in the size of their productive vocabularies. This difference is fully attributed to the differences in maternal speech.(Erika Hoff ,2003:1368-1378).On the other hand, children from lower SES build their vocabularies at slower rates than children from higher SES(Arriaga Fenson, Cronan & Pethick, 1998:209–223,Dollaghan et al.,1999:1432–1443,Feldman et al., 2000:310-322, Hart & Risley,1995, Hoff in press, Morrisset, Barnard, Greenberg, Booth & Spieker,1990:127–149,Rescorla, 1989:587–599, Rescorla & Alley,2001:434–445). This result is mainly contributed to biological differences in children's abilities, caused by

genes or health, by differences in family functioning and home environments (Linver et al., 2002:719–734:) and finally by differences in language learning experiences (Hoff & Naigles, 2002, Hoff-Ginsberg, 1998:603–629).

Further research has shown that this relation between SES and child vocabulary skill is due to the speech that parents offer to their children during day-to-day interactions (Hart & Risley, 1995, Hoff, 2003:147–160, Huttenlocher, Vasilyeva, Waterfall, Vevea & Hedges, in press). Parcel & Menaghan (1990:132–47), found that children who grow in families where mothers are occupied with jobs including variety of tasks and problems solving opportunities, manifested more advanced verbal competence. Higher SES mothers show more of the characteristics of maternal speech that are positively associated with language development than lower SES mothers (Hoff et al., 2002: 231–252). High-SES mothers use longer utterances and more different words when they talk to their children than low-SES mothers and, in turn, their children have larger vocabularies (Hoff, 2003:147–160). On the other hand, children from low-SES families experience very different communicative environments than children from high-SES families. Low-SES mothers are found to talk less and use less varied vocabulary during interaction with their children than high-SES mothers (Hart & Risley, 1995, Hoff, 2003:147–160, Hoff-Ginsberg, 1991:782–796, Lawrence & Shipley, 1996:233–56). Specifically, Hart and Risley, 1995, estimated that children from the high-SES families hear approximately 11 000 utterances in a day, compared to 700 utterances for the children from low-SES families. The parents of children who develop large vocabularies speak, on average, million more words to their children than do the parents of low-verbal children (Hart & Risley, 1995). High-SES parents more often verbally encourage and provide affirmation to their children than low-SES parents, and low-SES parents more often verbally discourage and prohibit their children's behavior than high-SES parents (Hart & Risley, 1995). Furthermore, low-SES mothers more often use speech to direct their children's behavior and high-SES mothers more often use speech to elicit conversation from their children (Farran &Haskins, 1980:780–91).Therefore, it is inevitable that parental knowledge of child development affect the relationship between SES and child-directed speech in different ways while parents from different SES groups have different beliefs about child development (J. Child Lang, 2008: 185–205). SES also appears to affect school attendance and the number of years of schooling

completed (Haverman & Wolf, 1995:1829–78, Brooks-Gunn & Duncan, 1997: 55–71). It seems to be the most consistent predictor of early high school dropout, being connected both to low parental expectations and to early initiation of sexual activity (Battin-Pearson et al., 2000). William H. Sewell and Vimal P, 1967:1-23, had earlier stressed that Socioeconomic Status is an important factor in determining who may be eliminated from the contest for higher education.

Last but not least, researchers emphasize the effect of school location on academic performance of children and the significant relationship between them. Specifically, they have examined the influence of school location on homework management as rural students tend to have lower educational aspirations (Arnold, Newman, Gaddy, & Dean, 2005, Cobb, McIntire, & Pratt, 1989, Hu, 2003) and place less value on academics (Ley, Nelson, & Beltyukova, 1996, Stern, 1994) than non-rural students, a fact that may influences the way they approach homework and eventually their academic performance.

Over the past 20 years, research has indicated that the educational aspirations of rural youth lag behind those of their urban counterparts (Arnold et al., 2005, Cobb et al., 1989:11-23, Eider, 1963:30-58, Haas, 1992, Haller & Virkler, 1993:170-178, Hektner, 1995:3-14, Hu, 2003:11, Kampits, 1996:171-177, Kannapel & DeYoung, 1999:67-79, Khattri,Riley, & Kane, 1997:79-100). For example, using descriptive statistics from the National Education Longitudinal Study of 1988 (NELS: 88), Hu examined educational aspirations and postsecondary access by students in urban and rural schools. Using 10th graders as a baseline population, the study found that higher percentages of rural students had aspirations for high school or below (16.6% for rural, in contrast to 11.0% for urban students) and for two-year college education (33.1% for rural, in contrast to 27.1% for urban students), and lower percentages of rural students had aspirations for four-year college education or beyond (50.2% for rural, in contrast to 61.9% for urban students). The study also found that smaller percentages of students in rural schools were enrolled in postsecondary institutions (51.1% for rural, in contrast to 57.4% for urban students).

Related findings from other studies have further indicated that rural students place less value on academics (Ley et al., 1996:133-141). In a study of 2,355 students from 21 rural high schools in 21 states, Ley et al. asked students to indicate the importance of 21

attributes relating to their personal goals after high school. The data revealed that they placed more importance on personal qualities (e.g., being dependable and having the ability to get along with others) and less importance on specific areas of academic achievement (e.g., being proficient with basic English skills and math skills). It follows, then, that lower educational aspirations and less importance placed on academics could lead to a sense that "school isn't for me" (Haas, 1992). Specifically, this approach could lead to a sense that "homework isn't for me," as alluded to in one survey of 210 high school seniors in seven rural high schools (Reddick & Peach, 1993:365- 494). This study found that whereas 91% of the students indicated that homework was directly related to what they were taught in class that day, only 37% felt that homework was beneficial.

Finally, literature suggests that, compared with urban students, rural students tend to have lower educational aspirations, place less value on academics, and have lower academic motivation (e.g., Arnold et al., 2005,Hu, 2003:11, Kannapel & DeYoung, 1999:67-79). These differences present that rural and urban students may approach their homework differently (i.e., homework completion behaviors and homework management strategies), while students' perception of the way school contributes to their future goals (e.g., postsecondary educational opportunities) influence their use of self-regulation strategies, deep-processing study strategies, effort, and persistence (Miller & Brickman, 2004:9-33, Schutz, 1997:193-201).

1.3. Risk factors as regards education attainment

Various factors are suggested in order to explain the difficulties of young people to obtain an adequate education level. Two aspects have to be considered: the access to educational attainment as well as the risk of dropout which is a priority for European Commission.

1.3.1 Risk factors that impact access to educational attainment

A large number of factors are generally taken into consideration by researchers. The most important ones concern the economic situation (poverty), the family structure and education involvement. Some studies also give importance to health aspect, considering that health has a direct impact on access to school.

(a) Poverty

A low-income family has lower educational and labor market attainments. The human capital of the mother is more related to the attainment of the child than is that of the father (Robert Haveman and Barbara, 1995:1829-1878). Family income is strongly related to children's ability and achievement related outcomes (Jeanne Brooks-Gunn and Greg J. Duncan, 1997: 55-71).Single parent families are characterized by low SES (Kenneth A. Dodge, Gregory S. Pettit and John E. Bates, 1994: 649-665). Low birth weight children of poor families seem to be more negatively affected by risks on IQ tests than the non-poor children (Pamela Kato Klebanov, Jeanne Brooks-Gunn, Cecelia McCarton and Marie C.McCormick, 1998: 1420-1436).Children from low-income homes were less likely than other children to be competent across domains (Charlotte J.Patterson, Janis B.Kupersmidt and Nancy A.Vaden, 1990: 485-494).Children born into poverty may be at extreme disadvantage for cognitive development, school achievement and later adult functioning, including literacy and economic success (Baydar et al., 1993:815–29, Miller and Korenman, 1994:233–43). Poverty puts children at risk for school achievement via nutritional and health factors (Crooks D.L., 1995: 57-86).Economic hardship distress in adolescentsboys and girls (Jacques D. Lempers, Dania Clark-Lempers and Ronald L. Simons, 1989:25-39). Poverty not only has a tangible effect on children through the provision of educational resources available to them, but through the detrimental psychological effect it exerts on their parents (Greg J. Duncan, Jeanne Brooks-Gunn and Pamela Kato Klebanov, 1994:296-318). Children who grow up in a poor or low-income family tend to have lower educational and labor market attainments than children from more affluent families, suggesting that parental choices or attributes that result in reduced access by children to economic resources or opportunities increase the chances of low attainment. Being poor as a child also has an independent and negative effect on the probability of giving birth as a teen and of becoming a welfare recipient **(**Robert Haveman and Barbara Wolfe,1995: 1829-1878**).**The worst effects of poverty on children can be explained by a lack of early cognitive development within the home (Guo & Harris, 2000:431–447)

(b) Family structure

The family structure is often evocated as a risk factor. For some authors, family structure is the most important school level predictor of academic achievement (Carl L.

Bankston and Stephen J. Caldas, 1998: 715-723).Growing up in a single-parent family should have a negative effect on educational attainment (Robert Haveman and Barbara Wolfe, 1995: 1829-1878). Things become even worse when mother works.This situation has a negative effect on educational attainment due mainly to the loss of child care time (Robert Haveman and Barbara,1995: 1829-1878).Single-parent families have a strong negative relation to standardized test scores (Carl L. Bankston III and Stephen J. Caldas, 1998: 715-723). Such families are unable to furnish large amounts of parental involvement (Mc Lanahan and Bumpass 1988).Moreover, female-headed families are often associated with low academic achievement (Carl L. Bankston and Stephen J. Caldas Source,1998: 715-723).Single-parent family is likely to affect behavior in children (Chase-Lausdule & Hetherington, 1990).Growing up in a family in which the mother chooses to work appears to have a modest adverse effect on educational attainment, suggesting a negative effect of the loss of child care time. However, mother's work choices do not appear to have an effect on the probability that a girl will experience an out-of-wedlock birth in her teens, or be a welfare recipient, nor on educational attainment if the mother's work occurs during a child's teen years. In the last case, the role model or additional income effect appears to dominate (Robert Haveman and Barbara Wolfe, 1995: 1829-1878).Growing up in a single-parent or stepparent family (or experiencing a parental separation or divorce) has a negative effect on educational attainment, and studies in USA stipulate that larger effects are recorded for African Americans than for whites. Adverse effects of single-parent or stepparent living arrangements on the probability that a girl will experience a non-marital birth or a dissolved marriage are also recorded. There is some evidence that change in pa-rental living arrangements, rather than growing up in a single-parent family, plays a more significant role as a determinant of the probability of a teen non marital birth (Robert Haveman and Barbara Wolfe, 1995: 1829-1878).

(c) Ethnic minority (migrants) / people with special needs

Ethnic minority families are often characterized by low SES. This question has been largely examined in USA. In this country, it seems that white families had a significantly higher SES than African-American families (Kenneth A. Dodge, Gregory S. Pettit and John E. Bates, 1994: 649-665).Blacks tend to have lower scores because there are more likely than white children to live in low-income or single parent homes

(Charlotte J. Patterson, Janis B. Kupersmidt and Nancy A. Vaden, 1990: 485-494). Families from ethnic minorities are more likely to be poor and live in poor neighborhoods (Greg J. Duncan, Jeanne Brooks-Gunn and Pamela Kato Klebanov, 1994: 296-318).Discrimination and economic inequalities suffered by minorities result in their increased likelihood of living in poverty and that problems engendered by economic stress have a negative impact on child competence and school (Edelman, 1987). Disparities in education have been ongoing for generations. In a large study of individuals 65 years and older, 20.9 percent without a disability failed to complete high school, compared to 25.1 and 38.6 percent of individuals with a non-severe or severe disability, respectively, who failed to complete high school (Steinmetz, 2006).Great disparities exist when comparing the attainment of higher degrees. According to the 2006 Census, about 6 percent of persons aged 16-64 with a disability have obtained a bachelor's degree or higher, while 17 percent of individuals in the same age category with no disability have attained the same educational status (U.S. Census Bureau, 2006).

(d) Low parental education level

Parental completion of high school and one or two years of post-secondary schooling are found to have larger effect on children's schooling than years of parental schooling beyond that level(Robert Haveman and Barbara, 1995: 1829-1878).Illiterate parents are usually of low SES (Kenneth A. Dodge, Gregory S. Pettit and John E. Bates, 1994:649-665).Demir, Kilic, and Unal, 2010, found that parents' educational background was also an important indicator for students' mathematics achievement, and noted that if parents had higher educational background, this could increase their children's later mathematics success. (Demir, Kilic, and Unal, 2010:3099–3103). Starkey and Klein, 2000, noted the gap between students' mathematics achievement associated with their SES background was not only explained by parents' financial resources, but it was mostly based on parents' educational background and exposure to mathematics.(Starkey and Klein, 2000:659-680). Demir, Kilic, and Unal (2010) demonstrated that students whose parents were highly educated and exposed to mathematics before in their lives tended to show more success in mathematics than their peers whose parents were less educated and not being exposed to mathematics. (Demir, Kilic, and Unal, 2010:3099–3103). The reason for this correlation is because highly educated parents knew the learning requirements and had the opportunity to provide the best educational environment and accompaniment for their children (Alomar, 2006:907-922).

(e) Low parental involvement

Various empirical studies have shown that socioeconomic Status and parental involvement are positively related(Balli,1996:149-155,Bracey,1996:169-170,Brody,1995: 567-579).The relationship between parental involvement and student's academic achievement reflects to some degree the relationship between SES and students' academic achievement (Xitao Fanand Michael Chen,2001). Parental involvement in its many and varied ways seems to be a vital parameter for increasing children's mathematics achievement. (Friedel, Cortino, Turner, and Midgley, 2010:102-114). Once parents believe their support is of importance to their children's mathematical development, they will try to provide as many opportunities as they can (Bicer et al., 2012), and students who have had opportunities at home to learn mathematics demonstrated more mathematical achievement than their peers who lacked such opportunities.

(f) "Marginalized" neighborhoods

Growing up in a neighborhood with "good" characteristics has positive effects on child's schooling and earnings. A neighborhood of good characteristics is a neighborhood of more educated people, more income and less unemployment (Robert Haveman and Barbara, 1995:1829-1878).Poor neighborhoods are more likely to have lower quality of schools (Greg J. Duncan, Jeanne Brooks-Gunn and Pamela Kato Klebanov, 1994: 296-318). Effectively, in marginalized neighborhoods with poverty and insecurity, problems are often observed in terms of quality school which explains that young are more likely to abandon school (Jeanne Brooks-Gunn and Greg J. Duncan, 1997:55-71).Low birth weight children from affluent neighborhoods have high IQ scores in contrast with the children from less affluent neighborhoods (Pamela Kato Klebanov, Jeanne Brooks-Gunn, Cecelia Mc Carton and Marie C.Mc Cormick, 1998: 1420-1436).

(g) School location

Data from the National Assessment of Educational Progress, for example, indicated that the achievement of children in affluent suburban schools was significantly and consistently higher than that of children in "disadvantaged" urban schools (U.S. Department of Education, 2000).Children from urban schools were superior to their rural counterparts (Obe, 1984: 123-134). There was a significant difference between

academic performance of students in rural and urban area in public examinations (Owoeye, 2000).

(h) Health dimension

It is considered that children in less developed countries usually have worse health and education outcomes than children in wealthy countries. This reflects the lower incomes of households in these countries, as well as the lower quality and less accessible health and education services (relative to wealthy countries).

The researchers, Janet Currie and Mark Stabile, 2002, examined the effect of health shocks on education, mainly on math and reading scores. They found that health shocks affect negatively test scores and future health in very similar ways).Most of the best recent studies have found sizeable and statistically significant positive impacts of child health on education (Paul Glewwe, Edward Miguel 2001: 345-368).Indeed, many scientists argue that poor childhood health leads to low academic outcomes and poor adult health, both of which subsequently reduce adult wages and labor productivity (Alderman, Hoddinott, & Kinsey, 2006:450-474).

A research of Richard A. Miech, Avshalom Caspi, Terrie E. Moffitt, Bradley R. Entner Wright, and Phil A. Silva, 1999: 1096-1131, has examined the influence of adolescent mental disorders on educational attainment. They found effects that varied by mental illness: internalizing disorders had no effect on educational attainment, while externalizing disorders exerted a strong negative influence. The internalizing disorders of anxiety and depression did not significantly affect educational attainment in any of their models. Consequently, externalizing disorders impaired achievement at every educational transition in their study. In sum, by the time adolescents with conduct disorder reach adulthood, they appeared to be "selected" into the lower socioeconomic strata through restricted educational attainment. Lower socioeconomic background was significantly associated with impaired educational attainment in all models.

Poor health may reduce learning for a variety of reasons, including fewer years enrolled, lower daily attendance and less efficient learning per day spent in school. Many of the earliest randomized studies by nutritionists and other public health researchers focused on the impacts of specific nutrients that were lacking in children's diets. Studies in India and Indonesia by Soemantri, Pollit, and Kim, 1985:1221-1228, Soewwondo, Husaini,

and Pollit, 1989:667-674, and Seshadri and Gopaldas 1989:698-702, found large and statistically significant impacts on cognitive development and school performance of iron supplementation among anemic children, while a study by Pollit and others, 1989, found no such impact in Thailand. Recent research has shown that child nutrition affects delayed school enrollment and the number of grades completed (Alderman et al. 2001: 79-123, Glewwe, Jacoby& King, 2001: 345-368). The role of breakfast in enhancing cognitive and academic performance, psychosocial function, and school attendance has been studied widely. Breakfast consumption could impact cognitive performance by alleviating hunger the prevalence of which is well documented and has been associated with emotional, behavioral, and academic problems in children and adolescents. Evidence suggests that breakfast consumption may improve cognitive function related to memory, test grades, and school attendance. Breakfast as part of a healthful diet and lifestyle can positively impact children's health and well-being (Gail C. Rampersaud, Mark A. Pereira, Beverly L. Girard,Judi Adams,Ordan D. Metzl, 2005).

A student's nutritional and health status affects both expected attainment and performance in school. Poor vision systematically leads to higher drop-out rates to more grade repetition and to lower achievement. Well-nourished children indeed learn more(Joao Batista Gomes-Neto, Eric A. Hanushek, Raimundo Helio Leite and Roberto Claudio Frota-Bezzera, 1997:271-282). Indeed, a study in Sri Lanka, shows that early childhood malnutrition and has a direct and indirect impact on the test scores. However, in contrast with the above research, it assesses that hearing problems in school-aged children have the most significant impact on their education achievement. The effects of other health problems were largely insignificant. The results also show that parents reduce their investment in education if their child suffers from helminthes, myopia, hearing problems, and deficiencies in iodine. A better early childhood nutritional status has a positive, significant direct impact on test scores. On the other hand, children with hearing problems and illnesses are more likely to perform significantly worse on achievement tests resulting to abandon school. Finally, it remarkable that parents may decrease educational inputs for children in poor health. Consequently, children who are malnourished in early childhood and have health problems exhibit lower academic performance (Suzanne L.W. Wisniewski, 2010: 315–332)

From the above, it seems that the need for early childhood nutrition programs is imperative. In recent years, policy-makers have increasingly promoted early childhood

nutrition programs as a way to raise living standards in developing countries (World Bank, 1993, Young, 1996). Improved diet, particularly in the crucial first years of life, enhances intellectual development and, ultimately, academic success (Brown and Pollitt, 1996:38-43).It is apparent that there is a causal link between nutrition and academic success (Paul Glewwea, Hanan G. Jacoby, Elizabeth M. King, 2001:345-368).

A complex relation between Health-SES and Education

Parental socioeconomic structure may affects child's health and therefore child's educational outcomes. Children of higher socioeconomic status tend to have a healthier diet consuming less fats and more fruits and vegetables. However, such a nutritious diet requires a parent's economic capacity to provide these foods to his children. It is no coincidence that people who live in an affluent area are usually pressed to be thin while they have more opportunities for physical activity and finally easier local access to healthy foods. It is plausible that people of a high occupational level reflect a healthier lifestyle and a thin body while they are probably exposed to a work place which promotes these values. Indeed, bibliography indicates that well educated people are more likely to exercise, less likely to smoke, more likely to drink moderately and are more likely to get annual check-ups. Therefore, the well educated people have more positive health lifestyle. On the other hand, people of low education level who have not finished high school are likely to shape a sense of powerlessness affecting their health (Catherine E. Ross and Chia-ling, 1995:719-745)

Janet Currie and Mark Stabile (2002) conclude in their working paper that low-SES children are less able to respond to a given health shock while at the same time low SES children experience more shocks. However, both high and low-SES children recover from past health shocks to about the same degree. Moreover, it is notable the fact that they investigated that health of low SES children worsens with age, not so much because they lack the resources to respond to health shocks (though they did find evidence that they respond more slowly) but because they are subject to more shocks. Health shocks have effects on children's cognitive functioning and unfortunately on their future health. According to them, health shocks in childhood are likely to affect future SES in two ways, through their direct effects on future health, and by lowering academic performance.

SES factors affecting Health (Education, Personality Characteristics, Occupation, Not-Married)

Sorlie and colleagues recognize that the various dimensions of socioeconomic status are usually strongly correlated. The material and cultural resources of the parental home are strong predictors of a child's educational attainment. Therefore, it is apparent that education will mark the conditions during childhood, and these in turn will determine adult health. Educational attainment is also a strong predictor of occupation and labor market position during adulthood, and these can highly influence adult health. Most detailed, the level of education might affect the way a person receive health education messages. It enhances his health behavior quitting those that are health damaging. However, it is investigated that apart from the importance of education, personality characteristics such as time-preference or self-efficacy may independently influence both educational attainment and health behavior. Finally, poor health during childhood and adolescence could result in both low educational achievement and impaired adult health.

The level of occupation has also played a significant role in people's health. Occupations characterized by high demands and low control or effort reward imbalance appear to be associated with poorer health, particularly in relation to cardiovascular disease. Similarly, the combination of stress and social isolation appears to damage health. Finally, it is found that the groups whose members were likely to be living alone had an increased mortality risk compared with those who were married (American Journal of Public Health, 1995)

Poverty affects Health

But what does bibliography present us about the impact of income (poverty) on health? Research has confirmed that financial hardship is strongly associated with depression more than any other dimension of socioeconomic status including educational attainment, unemployment, housing tenure, childhood poverty and prior financial difficult (Peter Butterworth , Bryan Rodgers , Tim D. Windsor ,2009). David Ian who indicated a direct positive association between SES and health focusing on the three most important dimensions of SES, income, education and occupational status, concluded that income was consistently the best correlate of health status while occupational status showed the most inconsistent relationships with health status (David Ian Hay, 1988).

It is remarkable the fact that residents of poorer counties (those with greater than or equal to 20% of the population below the poverty line) have 13% higher death rates from cancer in men and 3% higher rates in women compared with more affluent counties (less than 10% below the poverty line since1990, there has been a widening of the area socioeconomic gradient, with men in poorer counties experiencing a 22% higher death rate from prostate cancer in 1999 compared with men in more affluent counties(Elizabeth Ward, Ahmedin Jemal, Vilma Cokkinides, Gopal K. Singh, Cheryll Cardinez, Asma Ghafoor,Michael Thun,2004*).*

Smoking, high fat diet, sedentary lifestyle they are all risk behaviors that do exhibit higher prevalence in lower socioeconomic groups. In 1995, 40 percent of men who were not high school graduates smoked. But the research consensus is that health disparities by economic status are only slightly mitigated when extensive controls are included for health risk behaviors (Marmot, 1999).

> "Wealth could grow more rapidly among those who started in better health because good health enhances future earnings capacity and facilitates savings. Alternatively, additional economic resources could help protect individuals from the ravages of age so that their subsequent health is better. Additional economic resources may increase health care utilization or induce good health behaviors, but even if behaviors were altered instantaneously, they can only directly impact on health investments and not health capital. Lastly, an important consideration is that economic resources may also be affected by the stock of health. Healthier people can work longer hours in a week and more weeks in year leading to higher earnings" (James P. Smith, Santa Monica final, 1999: 144–166).

1.3.2 Risk factors associated with early school leaving

The literature review reveals a variety of factors that contribute to the early school leaving phenomenon. Under-achievement, poor reading ability, low academic performance, poor self-concept/academic self-concept, and alienation from school are characteristic of the dropout children. Non-school related risk factors associated with early school leaving include macro level variables such as: low socio-economic status/social class, minority group status, male gender; and certain community characteristics. Indeed, internationally, early school-leaving is especially high among students from families of low SES and among ethnic minorities (Traag and Van der Velden, 2008:45-62). In Ireland, Byrne et al., 2008, report that the level of educational

qualification attained is particularly related to gender and socio-economic background. Meso variables include: household stress, family process/dynamics, limited social support for remaining in school, home-school culture conflict, assumption of adult roles (for example, high levels of employment or pregnancy). Micro level variables include: problematic student involvement with education (both the academic and social aspects of school), physical, mental and/or cognitive disabilities, and youth with high degrees of autonomy, experimenting with risk (e.g. drug and/or alcohol use, disregard for parental rules and/or civil laws) and finally, discrimination and identity. (Community Health Systems Resource Group, 2005)

According to PISA, roughly 25% of students in all participating OECD countries are unhappy with their school experience (Willms, 2003). The most commonly cited reasons offered by early school leavers for disengagement were related to school risk factors, rather than external influences. Leavers are more likely to perceive their school environment as unrewarding, have negative interactions with their teachers and experience social and academic problems (Van der, Woerd & Cox, 2003:208-310). School related factors associated with early school leaving include: ineffective discipline system, lack of adequate counseling, negative school climate, lack of relevant curriculum, passive instructional strategies, disregard of student learning styles, retentions or suspensions, streaming, and lack of assessment and support for students with disabilities. (Community Health Systems Resource Group, 2005)

Professor Roger Dale on behalf of NESSE (Network of Experts in Social Sciences of Education and Training), an independent team of experts which supported the European Commission from January 2007 to February 2011, presented how family and community elements are associated with Early School Leaving (ESL):

> " •Family and household level variables, such as: single-parent family, parents with a low level of education, large family size, other dropouts in the family, household stress, Household mobility, family process/dynamics, limited social support for remaining in school, home-school culture conflict, assumption of adult roles (for example, minding younger children, high levels of employment or pregnancy/childrearing).
>
> •Wider social issues, at the level of the society and community rather than at the level of the family. These include such factors as low socio-economic status/social class, minority group status, male gender and some community characteristics"

These factors shows that the biggest difference between ESLers and other young people is the level of parental education, though some of this may be explained by increasing educational opportunities in many countries. This relationship is especially marked in the case of girls, mothers' level of education had greater effects on girls than on boys. In addition, ESLers' parents were more likely to be unemployed, and when they were employed, to be much more likely to be involved in manual rather than intellectual work. However, the relative advantage of having more educated parents varies significantly across countries. It is strongest in the Eastern European countries (except Slovenia) and smallest in Sweden and Finland (Ianelli, 2003:27-53).

Though parental socio-economic status is clearly an important factor, parental aspirations and expectations for their children's education appear to be even more influential (Fan and Chen,2001:1-22). These expectations exert a strong independent effect on educational trajectories after controlling for marks and parental SES (Crosnoe, Mistry and Elder, 2002:258-291). However, the evidence is not wholly consistent. Alexander, Entwistle, and Horsey, 1997:801–14, found that neither the prevalence of parents reading to their children nor children's readiness to confide in their parents regarding school had a significant effect on graduation rates. However, young people who did confide in their parents at age 16, and whose parents were involved in school organizations, were more likely to graduate. Those who reported strict discipline in the household were significantly more likely to graduate from high school. Alexander et al, 1993, 1997, 2001, found that about 60% of children in lower SES families drop out of school versus 40% overall and 15% of those in higher SES families. The strongest association with ESL was family socioeconomic level. Alexander et al suggests that this association was so strong that 'the dropout problem in Baltimore, at its core, is a problem of economic and social disadvantage'. Other factors, such as family structure, mother's age, family stress, and maternal employment were also associated with the risk of dropout. Entwistle and Hayduk, 1988, also found that later school performance was related to early influences of parents (and also of teachers), even when controlling for cognitive ability. They found that parents' estimates of their children's academic ability in the third grade were related to children's academic outcomes four and nine years later (Entwistle and Hayduk, 1988:147-59)

All these findings suggest that patterns of academic performance are established early and that the social context within the family and the classroom are important in the

establishment and maintenance of these patterns. However, without that support, the risk of dropout increases.

> "Recovery from a shaky beginning at school is always possible, but by the time dropout-prone youths get to high school, the battle for many effectively has been lost. How does one "reengage" children who exit the primary grades plagued by self-doubt, alienated from things academic, over-age for grade, prone to "problem behaviors", and with weak academic skills?" (Alexander et al, 2001).

Table 1: Description of variables and weights proposed for inclusion

Variable	Response	Weight
Gender	Male	1
Family structure	Not living with both parents	2
Number of siblings	Five or more siblings	2
Father's employment status	Father unemployed	1
Mother's education	Left before Junior or Group certificate	1
Absences	Absent a few times a week	1
Perceived ability	Below average	1
Getting in trouble with teachers	Weekly or daily basis	2
Retention at a grade	Retained at least once during Primary school	1

Source: Eemer Eivers, Eoin Ryan & Aoife Brinkley, 2000.

Last but not least, according to the Europe 2020 Target:

> "Early leavers from education and training focuses on young people with a migration background are at greater risk of ESL from school (with the exception of the UK and Portugal). In 2012 the ESL rate of young people born abroad was on average more than double the ESL rate of natives (25.4% in contrast to 11.5% for natives). Compared to 2010, the ESL rate dropped 1.3pp for natives and only 1.1pp for foreign born. Greece, Austria and Cyprus show very high gaps with ESL rates of young people born abroad being at least three times higher than those for natives. The risk of early school leaving is closely linked to the lower socioeconomic status of migrants, language barriers and their limited access to sufficient learning support."

1.4. Conclusion

Current studies have indicated some specific factors that play an essential role in increasing children's mathematics achievement: Parental aspirations, parent-child communication, home structure, school location and parents' involvement in school's activities (Singh, Bickley, Keith, Trivetta, Keith, & Anderson, 1995: 297-315, Wang, 2004:40-54). Indeed, home experiences are vital in shaping children's future mathematical interests, beliefs, and motivations. Research about the effects of parental involvement on students' mathematics achievement have revealed that parent's SES and parent's education level play an important role on their children's early and later mathematics(Halle et al. ,1997:527–537). Parents with low-SES backgrounds seem to affect negatively children's mathematics scores. The reason for this relationship is because highly educated parents have more positive feelings towards mathematics and set higher expectations from school than less educated parents (Halleet al. ,1997:527–537, Brooks-Gunn, & Klebanov, 1997:55–71)achievement (Crosnoe & Cooper, 2010: 258-291, Clements & Sarama, 2007:461- 555, Jordan, Kaplan, Locuniak, & Ramineni, 2007: 36-46). Consequently, students who come from low-SES backgrounds (poverty, single-parent/stepparent family, bad neighborhood, low parental educational level, school in rural location and ethnic minorities/people with special needs) enter school far behind their peers who come from higher-SES backgrounds and understand less mathematical topics (Jordan et al., 2007:36-46).

According to bibliography, it seems that the factors that impact the access to educational system are interrelated and consist of the main education barriers in school achievement: poverty, family structure, and ethnic minorities/people with special needs, low parental education level, low parental involvement, bad neighborhood, rural school location and poor health. However, this study is not going to examine the factor of bad neighborhood because the research is going to be implemented in a country-level. (Low Parental Involvement could also be a subcategory of the factor: Low Parental Education Level).

CHAPTER 2: THE METHODOLOGICAL APPROACH AND SOURCE DATA

The present research attempts to investigate the exact relationship between socioeconomic background and student performance through a systematic selection of data in EU countries. The data collected concern 2009, the last year for which it is possible to obtain complete data. The survey focuses on 21 out of 28 countries of EU: Austria, Belgium, Czech Republic, Denmark, Estonia Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, Netherlands, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden and United Kingdom. The other countries: Bulgaria, Cyprus, Latvia, Lithuania, Malta, Romania and Croatia are excluded from the analysis due to absence of reliable information.

OECD is the main source of data that was used in order to identify the degree at which socioeconomic background and its components are related with reading performance across the 21 EU countries. Especially, this research is based on reliable data taken from the OECD *Programme for International Student Assessment* well-known as PISA.This programme is an ongoing one that began in the mid-1990s.Its main objective is to assess in which extend students near the end of compulsory education have acquired key knowledge and skills that are essential for full participation in modern societies. It is the only international education survey to include unique features such as policy orientation, which links data on student learning outcomes with data on students' backgrounds and attitudes towards learning and on key factors that shape their learning, in and outside of school, in order to highlight differences in performance and identify the characteristics of students, schools and education systems that perform well, the innovative concept of "literacy", which refers to students' capacity to apply knowledge and skills in key subjects, and to analyze, reason and communicate effectively as they identify, interpret and solve problems in a variety of situations, lifelong learning, as PISA asks students to report on their motivation to learn, their beliefs about themselves, and their learning strategies ,regularity which enables countries to monitor their progress in meeting key learning objectives and economies and finally a breadth of coverage, which, in PISA 2012, encompasses the 34 OECD member countries and 31 partner countries and economies. (OECD, 2010)

PISA is now used as an assessment tool in many regions around the world. It applies strict technical standards both for the samples of schools and students within schools

while the sampling procedures are quality assured. Therefore, OECD provides us with a variety and sufficient data in relation to student performance and its variables and that is the reason for which OECD and especially PISA was the main source of data in contrast to Eurostat and other sources for the survey conducted. Indeed, the data of Eurostat used in this research are limited because they could not enlighten and explain adequately the subject of this survey. The components analyzed are the **financial situation of households**, **parents' level of education**, **students' immigrant status**, **family structure**, **the location of the school attended by the students**, as well as the proportion **of early leavers from education and training**.

Pisa Methodology

To gather contextual information, PISA asks students and the principals of their schools to respond to background questionnaires of around 30 minutes in length. These questionnaires are central to the analysis of results in terms of a range of student and school characteristics. The questionnaires seek information about 1) students and their family backgrounds, including their economic, social and cultural capital, 2)aspects of students' lives, such as their attitudes towards learning, their habits and life inside school, and their family environment ,3) aspects of schools, such as the quality of the schools' human and material resources, public and private control and funding, decision-making processes, staffing practices and the school's curricular emphasis and extra-curricular activities offered,4)context of instruction, including institutional structures and types, class size, classroom and school climate and reading activities in class and 5)aspects of learning and instruction in reading, including students' interest, motivation and engagement.(OECD ,2009)

2.1. The measures of Education Level according to OCDE-PISA

PISA examines three domains that emphasize functional knowledge and skills and allow someone to participate actively in society, reading literacy, mathematical literacy and scientific literacy.

Reading literacy is defined in terms of individuals' ability to use written text to achieve their purposes. This aspect of literacy has been well established by previous surveys such as the International Adult Literacy Survey (IALS), but is taken further in OECD/PISA by the introduction of an "active" element the capacity not just to understand a text but to reflect on it, drawing on one's own thoughts and experiences.

Mathematical literacy is defined in terms of the individual's understanding of the role of mathematics and the capacity to engage in this discipline in ways that meet his or her needs. This puts the emphasis on the capacity to pose and solve mathematical problems rather than to perform specified mathematical operations.

Scientific literacy is defined in terms of being able to use scientific knowledge and processes not just to understand the natural world but to participate in decisions that affect it.

Table 2.1: Summary of PISA dimensions

Domain	**Reading literacy**	**Mathematical literacy**	**Scientific literacy**
Definition	Understanding, using and reflecting on written texts in order to achieve one's goals, to develop one's knowledge and potentially participate in society	Identifying, understanding and engaging in mathematics and making well-founded judgments about the role that mathematics plays, as needed for an individual's current and future life as a constructive, concerned and reflective citizen.	Combining scientific knowledge with the drawing of evidence-based conclusions and developing hypotheses in order to understand and help make decisions about the natural world and the changes made to it through human activity.
Components/ dimensions of the domain	Reading different kinds of text: continuous prose sub-classified by type (e.g. description, narration) and documents, sub-classified by structure.	Mathematical content – primarily mathematical "big ideas". In the first cycle these are change and growth, and space and shape. In future cycles chance, quantitative reasoning, uncertainty and dependency relationships will also be used.	Scientific concepts – e.g. energy conservation, adaptation, decomposition – chosen from the major fields of physics, biology, chemistry etc. where they are applied in matters to do with the use of energy, the maintenance of species or the use of materials.
	Performing different kinds of reading tasks, such as retrieving specific information, developing an interpretation or reflecting on the content or form of the text.	Mathematical competencies, e.g. modeling, problem-solving, divided into three classes: i) carrying out procedures, ii) making connections and iii) mathematical thinking and generalization	Process skills – e.g. identifying evidence, drawing, evaluating and communicating conclusions. These do not depend on a pre-set body of scientific knowledge, but cannot be applied in the absence of scientific content.
	Reading texts written for different situations, e.g. for personal interest, or to meet work requirements.	Using mathematics in different situations, e.g. problems that affect individuals, communities or the whole world.	Using science in different situations, e.g. problems that affect individuals, communities or the whole world.

Source: Measuring Student Knowledge and Skills, A New Framework for Assessments, OECD, 1999.

Student academic performance measurement has received considerable attention. This research is based on student or non-student profile which is developed on the bases of information and data collected from the results of PISA and especially those that arise from the concept of reading literacy.

2.2. Education Level in terms of Reading Literacy

(a) Defining Reading Literacy

International experts developed a framework and conceptual underpinning for the concept of literacy in PISA. According to them, literacy includes students' capacity to extrapolate from what they have learned and apply their knowledge in real-life settings while they can analyze reason, communicate and solve problems effectively in a variety of situations.

The acquisition of literacy is a lifelong process that takes place not only at school and through formal learning, but also through interactions with family, peers, colleagues and wider communities. Fifteen-year-olds cannot be expected to have learned everything an adult knows. Nevertheless, they should have a good and profound knowledge in areas such as reading, mathematics and science. In order to apply everything they learn to the real world, they need to understand fundamental processes and principles so as to use them flexibly in different situations. PISA thus measures students' ability to complete tasks and understanding key concepts relating to real life.

Theories of reading literacy based on cognitive skills emphasize the interactive nature of reading and the constructive nature of comprehension, in the print medium (Binkley & Linnakylä, 1997, Bruner, 1990; Dole, Duffy, Roehler, & Pearson, 1991: 239-264) and to an even greater extent in the electronic medium (Fastrez, 2001: 101-110, Legros & Crinon, 2002, Leu, 2007, Reinking, 1994). The reader understands a text by using previous knowledge and a range of text and situational indications that are often socially and culturally derived. Specifically, the reader uses various processes, skills, and strategies to foster, monitor, and maintain understanding. These processes and strategies are expected to vary with context and purpose as readers interact with a variety of texts in the print medium and with multiple texts in the electronic medium(OECD,PISA 2009 Assessment Framework, key competencies in reading, mathematics and science,2009)

> "The concept of reading literacy used in PISA is much broader than the historical notion of the ability to read. It is measured on a continuum, not as something that an individual either has or does not have. While it may be necessary or desirable to define a point on a literacy continuum below which levels of competence are considered inadequate, PISA charts continuous gradations of performance above and below such a threshold"(OECD,PISA 2009 Results: What Students Know and Can Do: Student Performance in Reading, Mathematics and Science(Volume I), 2010).

The PISA 2009 definition of reading considers reading as an integral part of reading literacy:

> "Reading literacy is understanding, using, reflecting on and engaging with written texts, in order to achieve one's goals, to develop one's knowledge and potential, and to participate in society."

The reading literacy that has been already described preserves many of the principles and operational features of PISA 2000, while also introducing new perspectives on reading literacy. An important addition for PISA 2009 is the inclusion of motivational and behavioral components in the definition and description of reading literacy. According to PISA, reading literacy goes beyond the simple measurement of a student's capacity to decode and understand literal information. Reading literacy in PISA also involves understanding, using, reflecting on and engaging with written texts, both to achieve personal goals and to participate actively in society.(OECD, PISA 2009 Assessment Framework, key competencies in reading, mathematics and science,2009)

Consequently, the definition of Reading Performance can be summarized as follows:

> "The capacity of an individual to understand, use, reflect on and engage with written texts in order to achieve his/her goals, to develop his/her knowledge and potential, and to participate in society. In addition to decoding and literal comprehension, reading literacy also involves interpretation and reflection, and the ability to use reading to fulfill one's goals in life. PISA focuses on reading to learn rather than learning to read. Therefore, students are not assessed on the most basic reading skills" (OECD, PISA 2009 Assessment Framework, key competencies in reading, mathematics and science, 2009).

(b) The assessment of Reading Literacy

Reading literacy is defined in terms of students' ability to understand, use and reflect on written text to achieve their purposes (OECD, PISA 2009 Assessment Framework, key competencies in reading, mathematics and science, 2009). This aspect of literacy has been well established by previous surveys such as the International Adult Literacy Survey (IALS), but is taken further in PISA by the introduction of an active element –

the capacity not just to understand a text but to reflect on it, drawing on one's own thoughts and experiences. In PISA, reading literacy is assessed in relation to the:

• Text format: Often students' reading assessments have focused on continuous texts or prose organized in sentences and paragraphs. From its inception, PISA has used in addition non-continuous texts that present information in other ways, such as in lists, forms, graphs, or diagrams. It has also distinguished between a range of prose forms, such as narration, exposition and argumentation. In PISA 2009, the framework encompasses both print and electronic texts, and the distinctions outlined above are applied to both. These distinctions are based on the principle that individuals will encounter a range of written material in their civic and work-related adult life (e.g. application, forms, advertisements) and that it is not sufficient to be able to read a limited number of types of text typically encountered in school.(OECD,PISA 2009 Assessment Framework, key competencies in reading, mathematics and science,2009)

• Reading processes: Students are not assessed on the most basic reading skills, as it is assumed that most 15-year-old students will have acquired these. Rather, they are expected to demonstrate their proficiency in accessing and retrieving information, forming a broad general understanding of the text, interpreting it, reflecting on its contents and reflecting on its form and features. (OECD, PISA 2009 Assessment Framework, key competencies in reading, mathematics and science, 2009)

• Situations: These are defined by the use for which the text was constructed. For example, a novel, personal letter or biography is written for people's personal use; official documents or announcements for public use a manual or report for occupational use and a textbook or worksheet for educational use. Since some groups may perform better in one reading situation than in another, it is desirable to include a range of types of reading in the assessment items. (OECD, PISA 2009 Assessment Framework, key competencies in reading, mathematics and science, 2009)

Levels of reading literacy proficiency

According to PISA, students within each country are sampled to represent the national population of 15-year-old students and each reading literacy task represents a class of tasks from the reading literacy domain. Tasks at the lower end of the reading scale and subscales differ from those at the higher end. Difficulty is determined by the length, structure and complexity of the text itself. However, what the reader has to do with that

text, as defined by the question or instruction, interacts with the text and affects the overall difficulty. A number of variables that can influence the difficulty of any reading literacy task have been identified, including the complexity and sophistication of the mental processes of the task (retrieving, interpreting or reflecting), the amount of information to be assimilated by the reader and the familiarity or specificity of the knowledge that the reader must draw on both from within and from outside the text. In an attempt to capture this progression of complexity and difficulty in PISA 2000, the composite reading literacy scale and each of the subscales were divided into five levels:

Table 2.2: Level Score points on the PISA scale

Literacy Level	**Performance**
5	More than 625
4	553 to 625
3	481 to 552
2	408 to 480
1	335 to 407
Below level 1	Less than 335

Source: PISA 2009, Assessment Framework, key competencies in reading, mathematics and science

> "These levels appear to be a useful way to explore the progression of reading literacy demands within the composite scale and each subscale. The scale summarizes both the proficiency of a person in terms of his or her ability and the complexity of an item in terms of its difficulty. The mapping of students and items on one scale represents the idea that students are more likely to be able to successfully complete tasks mapped at the same level on the scale (or lower), and less likely to be able to successfully complete tasks mapped at a higher level on the scale.It is expected that these levels as they were defined for PISA 2000 will be kept for the composite scale used to measure trends. For PISA 2009, newly constructed items will help to improve descriptions of the existing levels of performance and, ideally, furnish descriptions of levels of performance above and below those established in PISA 2000"(OECD,PISA 2009 Assessment Framework, key competencies in reading, mathematics and science,2009).

Finally, PISA explains that the top of the reading literacy scale currently has no bounds and thus there is arguably some uncertainty about the upper limits of proficiency of extremely high performing students. Nevertheless, such students are likely to be capable of performing tasks characterized by the highest level of proficiency. On the other hand, students who are at the bottom end of the reading literacy scale are of a greater issue.

Specifically, although the reading performance of students performing below Level 1 can be measured, their proficiency cannot be described.

> "In developing new material for PISA 2009 an effort has been made to design items that measure reading skills and understandings located below the current Level 1. The intention will be to describe what those skills and understandings are, and possibly to define one or more levels below Level 1"(OECD,PISA 2009 Assessment Framework, key competencies in reading, mathematics and science,2009).

2.3. Early Leavers from Education and Training

2.3.1 The meaning of Early School Leaving

The European Union defines early school leavers as people aged 18-24 who have only lower secondary education or less and are no longer in education or training (European Council, May 2003). Therefore, early school leavers are those who have only achieved pre-primary, primary, lower secondary or a short upper secondary education of less than 2 years.

European Commission points that early school leavers are young people who have dropped out of school before the end of compulsory education, those who have completed compulsory schooling, but have not gained an upper secondary qualification, and those who have followed pre-vocational or vocational courses which did not lead to a qualification equivalent to upper secondary level. On the other hand, those who participated in some form of education or training in the four weeks prior to the date of the survey are not considered to be early leavers from education. Moreover, young people who initially drop out of school but then return to finish upper secondary education before the age of 25 are also not regarded as early school leavers.(European Commission, 2011)

The reduction of the proportion of early school leavers is an integral part of the new Europe 2020 strategy which consists one of the Lisbon strategy to enhance Europe's competitiveness. It was set a target of 10 percent or less of early school leavers by 2020. An operational objective of the renewed Sustainable Development Strategy is to ensure that at least 85% of 22 year olds should have completed upper secondary education. (European Commission, 2011)

2.3.2 The economic and social cost of Early School Leaving

Early school leaving is linked to unemployment, social exclusion and poverty. Therefore, the early school leaving target is strongly related to smart and inclusive growth. It contributes to the confrontation of younger's unemployment and finally deprivation, social exclusion and poverty. Education can promote sustainable development. It is essential that all people have the basic knowledge and skills in order to fully participate in society. This is of significant importance because young people are enabled to understand our quick-evolving societies, especially in the context of globalization. Therefore, reducing the number of early school-leavers is crucial in a European Union because better educational levels help employability and progress in increasing the employment rate helps to reduce poverty.

The European Commissioner for Education, Culture, Multilingualism and Youth, Androulla Vassiliou, has pointed:

> "…..reducing the share of early school leavers across Europe by just 1 percentage point would create nearly half a million additional qualified young people each year. Most EU countries have made progress in reducing the number of young people leaving school with low qualifications, but more needs to be done."(European Commission, 2011)

Young people abandon education and training for many reasons. Early school leaving in Europe is strongly linked to social disadvantage and low education backgrounds. It is influenced by educational factors, individual circumstances and socio-economic conditions while it is a process which often starts in primary education with first experiences of failure and alienation from school. (European Commission, 2011)

According to European Commission, over 70% of early school leavers in the EU complete lower secondary education and around 17% have completed only primary education. This latter group is especially large in Bulgaria (38%) and Portugal (40%). Consequently, the question that arises is what young people do when they leave education.

In 2009, only 48% of early school leavers in the EU were in employment, while 52% were either unemployed or outside the labour market. The percentage of young people who had abandoned education but were in employment was highest in Malta (74%), Cyprus (74%), Portugal (71%), and the Netherlands (71%). (European Commission, Early school leaving in Europe – Questions and answers, Brussels 31 January 2011)

Especially large numbers of early school leavers were either unemployed or inactive in Slovakia (80%), in Bulgaria (73%) and in Hungary (71%). Moreover, Eurostat points out that on average across the EU, twice as many young people from the first generation of migrants abandon school early compared to their native peers (26% versus 13%).But again, there are substantial differences between Member States: In Greece, Spain and Italy more than 40% of young migrants are early school leavers. A few countries such as Portugal, the UK and Norway show lower rates of early school leavers among migrants compared to natives. In several Member States early school leaving is especially high among disadvantaged minorities such as the Roma population. (European Commission, 2011)

2.3.3 Methodology

Data are taken from the European Labour Force Survey (LFS), which is conducted in the 27 Member States, Croatia, the Former Yugoslav Republic of Macedonia, Iceland, Norway, Switzerland and Turkey. It is a large household sample survey providing quarterly results on labour participation of people aged 15 and over as well as on people who are not in employment. The national statistical institutes are responsible for selecting the sample, preparing the questionnaires, conducting interviews among households, and providing the results to the statistical office of the European Union (Eurostat). In 2010, around 1.5 million people across the EU were part of the survey. (European Commission, 2011)

2.4. Factors affecting study performance and progress

The performance of young people in academics is not only affected by their own characteristics gifted by the nature but also various factors are involved in these achievements. The purpose of this study is to examine and explore those factors that can affect younger's academic performance in EU. The most important factors highlighted through this research are economic, family's environment and last but not least the importance of school location on academic performance.

2.4.1 Economic Factors

(a) Income inequality

Income inequalities are one of the most significant and obvious differences in living standards within each country. High income inequalities typically illustrate a waste of human resources probably due to a large share of the population which is out of work or trapped in low-paid and low-skilled jobs.

OECD monitors income inequality and poverty across countries using a dedicated statistical database. This database is based on national sources (household surveys and administrative records) and on common definitions, classifications and data-treatments. According to OECD, all the indicators available through this database are based on the concept of "equivalised household disposable income", i.e. the total market income received by all household members (gross earnings, self-employment income, capital income), plus the current transfers they receive, less the taxes and social security contributions they pay. Income distribution data refers to the total population and are based on equivalised household disposable income, i.e. disposable income adjusted for household size. Household income is adjusted for differences in the needs of households of different sizes with an equivalence scale that divides household income by the square root of household size. Apart from the fact that household income is one of the factors shaping people's economic well-being, it is also the one for which comparable data for all OECD countries are most common. Income distribution constitutes tradition within household-level statistics, with regular data collections going back to the 1980s in many countries.

<u>The meaning of Income</u>

> "Income is defined as household disposable income in a particular year. It consists of earnings, self-employment and capital income and public cash transfers; income taxes and social security contributions paid by households are deducted. The income of the household is attributed to each of its members, with an adjustment to reflect differences in needs for households of different sizes (*i.e.* the needs of a household composed of four people are assumed to be twice as large as those of a person living alone)" (OECD, 2014).

According to OECD income inequality among individuals is measured by four indicators: The Gini coefficient, the S90/S10 ratio, the S90/S50 ratio which is the ratio of the upper bound value of the ninth decile to the median income and the S50/S10 ratio

which is the ratio of median income to the upper bound value of the first decile (OECD, 2014).

The meaning of Gini coefficient

"The Gini coefficient is based on the comparison of cumulative proportions of the population against cumulative proportions of income they receive, and it ranges between 0 in the case of perfect equality and 1 in the case of perfect inequality." (OECD, 2014)

Specifically, it takes values between 0 for a perfectly equal income distribution where every person has the same income, and 1 which refers to a situation of maximum inequality where all income goes to one person.

The meaning of S90/S10 income share ratio

The S90/S10 income share ratio refers to the ratio of average income of the top 10% to the average income of the bottom 10% of the income distribution. Poor working conditions are those living in households with only one working age head and at least one worker with income below the poverty line.

(b) Poverty and social exclusion

The main objective of social policy is the elimination of the economic difficulties across countries. However, as perceptions of "a decent standard of living" differ across countries and over time, the measure of absolute poverty is not commonly accepted. Therefore, to measure poverty it is better to look at "relative" poverty, whose measure is based on the income that is most typical in each country in each year.

The meaning of Poverty Rate

> "Relative income poverty is measured by the poverty rate and the poverty gap. **The poverty rate** is the ratio of the number of people whose income falls below the poverty line and the total population. The poverty line is taken as half the median household income. However, two countries with the same poverty rates may differ in terms of the relative income-level of the poor. This dimension is measured by the poverty gap, *i.e.* the percentage by which the mean income of the poor falls below the poverty line." (OECD "Poverty rates and gaps", 2010)
>
> OECD used data provided by national experts applying common methodologies and standardized definitions. In many cases, experts have made several adjustments to their source data to conform to standardized definitions. While this approach improves comparability, full standardization cannot be achieved. Also, small differences between periods and across countries are usually not significant

(OECD"Poverty rates and gaps", 2010).
"Measurement problems are especially severe at the bottom end of the income scale. Further, as large proportions of the population are clustered around the poverty line used, small changes in their income can lead to large swings in poverty measures. Small differences between periods and across countries are usually not significant" (OECD,"Poverty rates and gaps",2010).

(c) Production size (GDP)

"Gross domestic product (GDP) is the standard measure of the value of the goods and services produced by a country during a period. Per capita GDP is a broad indicator of economic living standards. Each country calculates GDP in its own currency"(OECD, 2008).

The comparability among countries can only be achieved when these estimates are converted into a common currency. Usually, the data are converted by using exchange rates. However, this way can give a misleading comparison of the volumes of goods and services produced. Therefore, comparisons of GDP between countries are best made using purchasing power parities (PPPs) to convert each country's GDP into a common currency. PPPs are currency converters that equalize the purchasing power of the different (OECD, 2008).

The meaning of GDP

"Gross signifies that no deduction has been made for the depreciation of machinery, buildings and other capital products used in production. "Domestic" means that it refers to production by the resident institutional units of each country. As many products are used to produce other products, GDP measures production in terms of value added. GDP can be measured in three different ways: as output less intermediate consumption (i.e. value added) plus taxes on products (such as VAT) less subsidies on products, as income earned from production, obtained by summing employee compensation, the gross operating surplus of enterprises and government, the gross mixed income of unincorporated enterprises and net taxes on production and imports (VAT, payroll tax, import duties, etc, less subsidies) or as final expenditure on the goods and services produced, obtained by summing final consumption expenditures, gross fixed capital formation, changes in inventories and exports less imports."(OECD, 2008)

2.4.2 Family's environment

(a) Parent's Educational Level

The definition

The educational categories, for each country, used to compare parents' and young people's educational attainments are the following levels. A person of low level of education is considered to be the one who has not completed upper secondary education. A person of a mid-level of education is thought to be the person who has completed upper secondary or post-secondary non-tertiary education. Finally, a highly educated person is considered to be the one who has completed tertiary education.

Methodology

All the data selected to examine the relationship between parents' educational level and reading performance of youth across the 20 EU countries, are selected by PISA (The Programme for International Student Assessment)2009 (Education at a Glance 2012-OECD 2012). In the analysis of the educational attainment data, the information collected are referring to people 25 to 34 years old, while the analysis of the school-attendance data concerned the 20 to 34 years old. On the one side, it is examined the educational attainment level of 25-34 year-old non-student population, by educational attainment level of their parents. Specifically, data allow us to investigate inequalities in educational attainment by comparing the educational attainment of 25-34 year-old non-students to that of their parents. On the other hand, it is examined the proportion of 20-34 year-olds in higher education by parent's educational background. The data allow us to investigate inequalities in educational attainment by comparing the educational attainment of 20-34 year-old students in higher education by that of their parents.

The assessment of the inequalities in access to higher education is achieved by comparing the proportion of students from a certain educational background who attend higher education to the proportion of parents with this level of education in the total parent population. For example, the possibility of someone coming from a family with low levels of education is calculated as the proportion of students in higher education whose parents have low levels of education compared with the proportion of parents with low levels of education in the total parent population.

It is crucial to mention that there is probably a lack of data (under-reporting of participation) because there may be students who begin higher education before the age of 20.

(b) Family Structure

The definition

The family is usually the first place where students can be encouraged to learn. Indeed, family differences may influence learning beyond what occurs in the classroom. For example, parents may read to their young children, assist them with homework and, in some countries, actively participate and help them in homework. For older students, a supportive family can provide encouragement and meet with teachers or school administrators to keep track of their children's progress in school. On the other hand, students with less supportive family backgrounds may therefore benefit from targeted support within the school system.

Nevertheless, nowadays, families have changed especially in the latter half of the 20th century. In particular, marriage rates have declined in many countries while divorce rates have stabilized at high levels. Unfortunately, the proportion of families with children headed by a lone parent has increased. Such single parent families with children, especially those headed by a single, unmarried woman, are usually viewed as being at increased risk for poverty, dysfunction, and disadvantage. The EU member countries, all highlight these family types as among the most vulnerable. (Biterman and Bojerson, 2002, Duncan and Brooks-Gunn, 1997: 296–318, Bradbury, Jenkins, and Micklewright, 2001: 11-32, Forssen, 1998, Frick and Wagner, 2000; Phipps, 1999, Vleminckx and Smeeding, 2001).

According to a U.S. review of research:

> "A good deal of evidence suggests that family structure and stability are associated with direct indicators of child and later adult well-being such as social and emotional adjustment, educational outcomes, family formation and labour force participation."(Sandefur & Mosely, 1997: 334-335)

Methodology

Across the 21 EU countries, a large number of students live in families with one parent. All data included are from Eurostat, 2014[2].

[2]http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tesov190

(c) Immigrant Status

The definition

According to PISA there are three types of student immigrant status:1) **the first-generation** students, who are foreign-born students whose parents are also foreign born, 2) **the second-generation** students who were born in the country of assessment but whose parents are foreign-born, and finally 3) the students without an immigrant background, **non-immigrant students**, who were born in the country where they were assessed by PISA or who had at least one parent born in the country.

In Germany, there is growing concern about the difference in the living conditions between native-born German children and those born to immigrants, foreigners, and ethnic Germans (those who migrated from Eastern European countries to Germany). Foreign-born children have a higher poverty risk and tend to be on less favorable educational tracks than native-born German children. One result is poorly qualified youth who are likely to face severe problems in the labour market (Frick and Wagner, 2000).

In France, the demographic diversity of children has increased with immigration from former colonies, along with arrivals of refugees from other parts of the world. Along with this is growing concern regarding these immigrant children (or French-born children of immigrant parents). Children from non-European immigrant backgrounds often have difficulties mastering the French language and integrating into French schools. In addition, they may face other problems, including overcrowded living conditions, violence in their neighborhoods, social exclusion and poverty (Glassman, 2000).

In Greece, immigrant children are of particular concern because of their overall vulnerability (Moussourou, 2002). In addition to all other problems, they face an educational system to which they cannot easily adapt, since they do not know the language and are often unwelcome among the other children. Sweden is increasingly diverse as well. About 1 out of every 4 children in Sweden has their roots in other parts of the world, and in the larger cities the proportion is close to half (Nordenstam, 2002).

Methodology

The data used cover students who are between 15 years and 16 years of age at the time of assessment, and who have completed at least 6 years of formal schooling, regardless of the type of institution in which they are enrolled and of whether they are in full-time or part-time education, whether they attend general or vocational programmes, and whether they attend public, private or foreign schools within the country (OECD, 2012). More specifically, it is examined the performance of 15 and 16 year old students with an immigrant background across the 20 EU countries. The performance of foreign born students is highly influenced by their educational experience in another country and they can therefore be only partially attributed to the host country's education system. Foreign born students may be academically disadvantaged either because they are immigrants entering a new education system or because they need to learn a new language in a home environment that may not facilitate this learning (OECD, PISA 2009 Results: Overcoming Social Background – Equity in Learning Opportunities and Outcomes, 2010).

2.4.3 School Location

The definition

In some countries, student performance and the socio-economic or organizational profile of school systems vary considerably according to where schools are located. Therefore, some countries have undertaken the PISA surveys at regional levels in order to capture variation among school systems and regions within countries (e.g. Belgium, Finland, Italy, Spain and the United Kingdom).

An analysis of regional differences adds a useful perspective. Compared with an international perspective, regions within a country are likely to share many cultural, social and economic characteristics. A regional analysis thus yields insights for policy makers that are less influenced by cross-country differences. PISA countries that gather data at the regional level have the unique opportunity to foster greater co-operation and collaboration across educational authorities and some do so actively (Bussière et al., 2007).

Another way to analyze geographical performance variation is by school location. Schools are located in communities of different sizes. A large community or a densely populated area can make more educational resources available for students. Isolated

communities might need targeted support or specific educational policies to ensure that students attending these schools reach their full potential. Sometimes the differences in performance by school location are the result of the different socio-economic context of these locations. Countries vary widely in the densities, characteristics and distributions of populations across different types of communities and these differences need to be borne in mind when interpreting a cross-country analysis of how students in these different communities perform.

Methodology

The students are categorized in relation of the location of the school they attend. Firstly, there are the students attending schools located in a village, hamlet or rural area (fewer than 3000 people). Secondly, there are the students attending schools located in a small town (3000 to about 15000 people). Thirdly, there are the students attending schools located in a town (15000 to about 100000 people). Fourth, there are the students attending schools located in a city (100000 to about 1000000 people) and finally the students attending schools located in a large city (with over 1000000 people). All data included are from PISA 2009 in a survey across the 20 EU countries (OECD, PISA 2009 Results: Overcoming Social Background – Equity in Learning Opportunities and Outcomes, 2010).

2.5 CONCLUSION

"Quality education is the most valuable asset for present and future generations. Achieving it requires a strong commitment from everyone, including governments, teachers, parents and students themselves. The OECD is contributing to this goal through PISA, which monitors results in education within an agreed framework, allowing for valid international comparisons. By showing that some countries succeed in providing both high quality and equitable learning outcomes, PISA sets ambitious goals for others." (Angel Gurría, OECD Secretary-General).

PISA constitutes of a global testing system, launched in 2000 by Andreas Schleicher, deputy director of education with the Organisation for Economic Cooperation and Development when 260,000 students took part. The goal of PISA tests is not to measure students' knowledge of science and mathematics, or how well they are able to read, but

whether they can apply that knowledge creatively in new situations. Interestingly, Andreas Schleicher points out that "the world's economy no longer pays you for what you know, but what you can do". Therefore, it is very important for countries to improve their students' reading performance over the years, by reducing the proportion of poor-performing students, increasing the share of high performers and weakening the impact of students' socio-economic status on their performance. The fact that diverse groups of countries have succeeded in raising the level of their students' performance in reading indicated that any country con improve irrespective of its culture, traditions, level of development or initial level of skills. According to Mr Schleicher although no country has achieved the goal of developing a completely equitable education system, some have been able to weaken the link between students' socio-economic backgrounds and their performance. (Geoff Maslen, 2013)

This study focuses in two basic concepts, Reading Literacy, a qualitative approach and Early School Leavers, a quantitative one. Actually, we could seek for other indicators and data since literature provides a wide range of them, however, the restricted access to data as well as the limited availability of information constituted of a major obstacle. Eventually, we concluded that it would make more sense to reduce the number of variables used in order to be certain that we deal with reliable statistical data.

CHAPTER 3: THE EVALUATION OF THE MAIN FAMILY SOCIO-ECONOMIC FACTORS ON YOUNGS' EDUCATION LEVEL

In order to examine in which extent the socio-economic factors have a direct impact on European countries' education levels, it is previously necessary to detect and evaluate the spatial inequalities as regards educational attainment. Consequently this chapter attempts firstly to analyze and discuss the different EU countries' reading performances in regards with the main economic and social factors susceptible to influence assessment results. In other terms, we will try to highlight the extent to which the socio-economic status of young people affects or not their educational attainment. Through a systematic analysis of the selected indexes, the objective of the analysis is to propose some clear responses to the following questions: Can we stipulate that the European Union presents significant inequalities in terms of education level? Moreover, if it happens, could we consider that the well-known Convergence Club's phenomenon, usually measured on the basis of economic indicators, also appears in other fields such as education?

3.1 A FIRST COMPARATIVE APPROACH ON EDUCATIONAL LEVEL IN EU

This comparative approach is mainly focused on two dimensions: (i) the distribution of young non student as regards their educational attainment level and (ii) the main question of early leavers from education which represents a "socio-economic" threat for the society in itself.

Education level of young non-student people

In 2009, less than 20% of young non-student population in EU is characterized by a low educational level (Table 1) while at the opposite around 34% has a high level. Among the countries significant differences can be observed with some countries presenting a very specific profile, especially Portugal as well as - but in a fewer degree - Spain and Italy. Generally, the low education level of young non-students remains a true challenge for the Mediterranean countries even if in Spain, a relatively high percent of young people (39% against 34% for EU-21) has a high education level.

Table 3.1: Proportion of the educational attainment level of 25-34 year-old non-student population

Country	25-34 year-olds attainment(%)		
	Low	Medium	High
EU21 average	**17%**	**48%**	**34%**
Portugal	53%	24%	23%
Italy	33%	49%	19%
Spain	36%	25%	39%
Greece	26%	46%	28%
Slovak Republic	5%	75%	20%
Czech Republic	6%	75%	19%
Slovenia	8%	61%	32%
Poland	8%	57%	35%
Hungary	14%	61%	25%
Austria	12%	68%	20%
Germany	14%	60%	26%
United Kingdom	21%	38%	41%
Belgium	17%	40%	43%
Finland	10%	47%	43%
France	16%	41%	43%
Netherlands	16%	41%	43%
Sweden	9%	46%	45%
Denmark	14%	39%	47%
Estonia	14%	39%	47%
Ireland	15%	37%	48%
Luxembourg	14%	36%	50%

Source: OECD. Transition Ad Hoc Module, EU Labour Force Survey 2009 and Adult Literacy and Lifeskills Survey (ALL). See Annex 3 for notes (www.oecd.org/edu/eag2012).

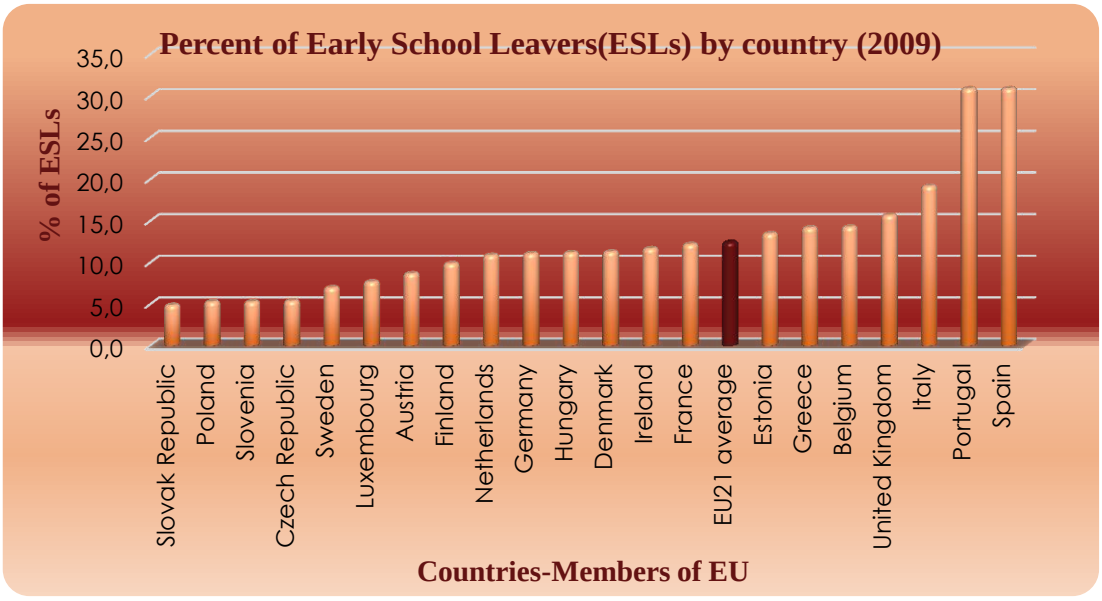
On the other hand, the northern European countries obviously seem to have the most efficient education system in Europe with at least 40% of young non-students with tertiary education. We can admit that their policies and investments in education and science have yielded. According to Eurostat, in 2010, the highest public spending on education relative to GDP was observed in Denmark (8.8 % of GDP), while Sweden (7.0 %), Finland (6.8 %), Belgium (6.6 %) and Ireland (6.5 %) also recorded relatively high proportions(Educational expenditure statistics, Eurostat, February 2015).If they have the highest rates of highly educated young non-students in Europe, although the percent of low educated is really most important comparatively to Central Europe's countries close to the EU21 average, reflecting the existence of social inequalities and integration problems of immigrants. Immigrants in Denmark, Sweden, Belgium and Netherlands tend to have lower labour market participation and employment rates than

native-born enhancing social disparities (OECD, 2009, The labour market integration of immigrants and their children. Key findings from OECD country reviews. High-level policy forum on Migration. Paris). Indeed, the countries of Central Europe for which we have data (Slovak Republic, Czech Republic, Slovenia and Poland) present a very different situation. Most of young people have at least reached a medium attainment level with a relatively strong percent of high education in Slovenia and Poland. Especially, the Polish education system was effectively restructured after the transition period, focusing on pre-university level. (Miriam Beblo and Charlotte Lauer, 2002). Finally two main countries of the Euro Area (Germany and Austria) present a specific profile with a remarkably "small" percent of highly educated young people as compared to EU21 while most of young people have a medium level. In fact, this result is not surprising because these countries do not focused education investments so much in university system but much more in vocational learning adapted to the labor market's needs. In terms of higher education, Germany is only in the middle of the range compared with the EU as a whole while it is one of the European countries in which vocational training and learning on the job is a traditional component of the education system (Ute Hippach-Schneider, Martina Krause, Christian Woll, 2007).

Early leavers from education and training

Early School Leaving (ESL) is an obstacle in terms of economic growth and employment while it is also a major key in terms of social integration. People who abandon school early face significant difficulties to incorporate into the workforce (Europe 2020 Target). They usually suffer of skills and qualifications' lack and in many case, they are non-competitive while finally they contribute to poverty and social exclusion. It is well recognized that if early school leavers - at individual level - are confronting many problems and difficulty to integrate the labor market, they also represent a collective problem and huge costs for European economies and welfare states.

Graph 3.1: Percent of Early leavers by country (2009)



Source: Own treatment

Data referring to early school leavers 18-24 years olddiffer widely across European countries (Graph 1) with a coefficient of variation CV = 58%. Considering the 21 European countries, 12.4% of this young population had not finished upper secondary education and were not in education and training, in 2009. More especially, most of the eastern countries (except Estonia) present low rates of ESLs (below 10%) revealing a supportive educational system. We can stipulate that these Member States have obviously implemented coherent and comprehensive strategies to prevent and reduce the risk of early school leaving. At the opposite, Portugal and Spain as well as Italy in a lesser degree, are confronted to a very serious problem. In the two first mentioned countries, the percent reaches 30%, a fact indicating the existence of a weak educational system which offers limited opportunities to young people coping with unemployment.

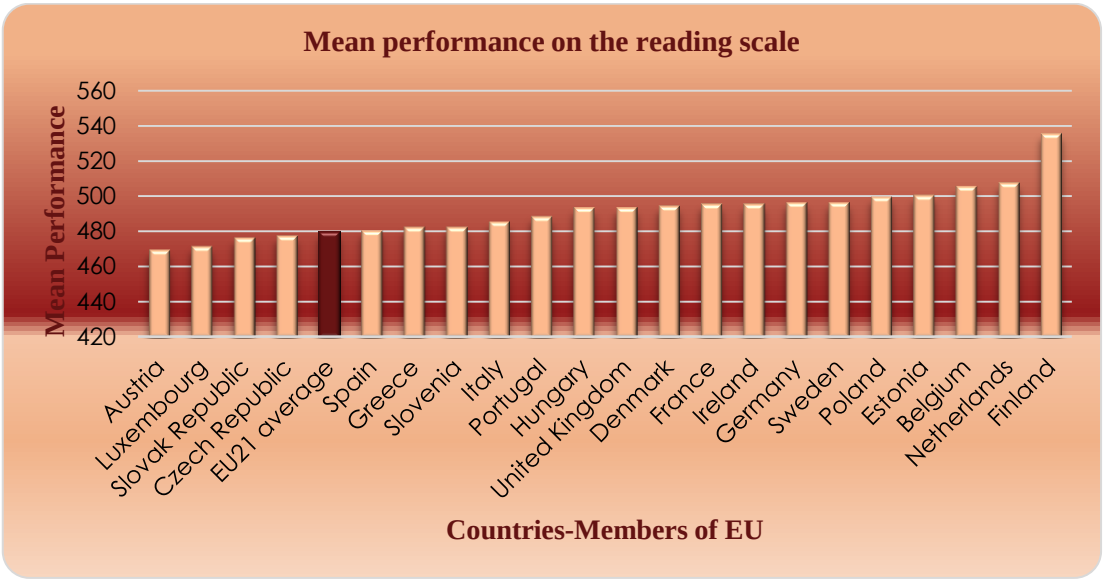
> "The increase in the rates of early school leaving in Spain can be explained by the massive wave of migration, an external factor, as well as by the failure of the educational system to ensure the adequate levels of education of the population."(Enrique Fernandez-Macias, Jose-Ignacio Anton, Francisco-Javier Brana,Rafael Munoz De Bustillo ,2011).

As regards all the other countries, they are not statistically very different from the EU average, with Sweden and Luxembourg better positioned. The above classification suggests that the ESL is positively correlated with high degree of large history of immigration and installing of foreign population as it is the case for France, Belgium or United Kingdom.

Performance of education through Reading score

The two above characteristics have direct impact on education's performance as we are going to examine in this paragraph. Most countries monitor students' learning and the performance of schools. The results from the 2009 PISA assessment reveal some differences in educational outcomes, both within and across countries.

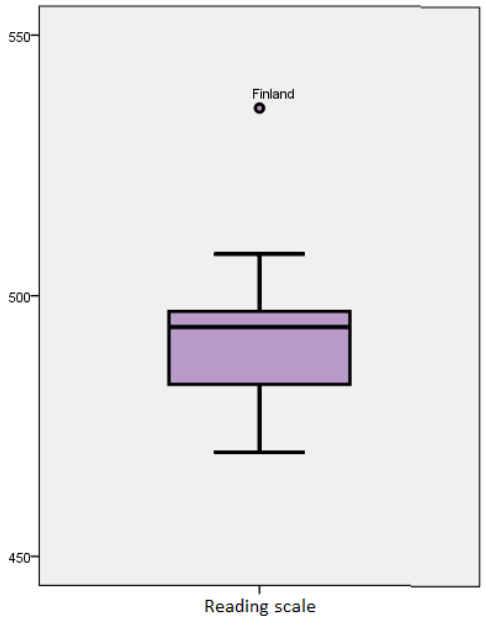
Graph 3.2: Mean Performance on the Reading Scale



Source: Own treatment

At a first glance (Graph 2), it is clear that European countries' performance of education ranges approximately at the same rates with very small deviations (CV=3%) except Finland. This country presents effectively the highest performing level among European country with mean score of 536 points. This success can be explained by general socio-political and historical factors such as the rapid development of the Finnish well-fare state as well as by the bold education policies adopted the past forty years with its emphasis on educational equality (Sirkku Kupiainen, Jarkko Hautamäki, Tommi Karjalainen, 2009). At the opposite, Austria is the lowest performing country with an average score of 470.According to Gerda Neyer and Jan M. Hoem, Austria is a country of educational and social conservatism. It supports mothers' absence from the labor market and which does not strive actively to reduce gender and social inequality. Therefore, we can observe that the gap between the highest and the lowest performing EU21 countries is only 66 points indicating, again, that the differences on reading performance between countries are small even if we can affirm that Finland is a specific case (graph 3).

Graph 3.3: Reading Scale Distribution



Source: Own treatment

Specifically, it seems that most European countries' reading performance is close to the EU21 average and usually better. Finally, addressing the educational needs of such diverse populations and narrowing the gaps in student performance that have been observed remains formidable challenge for all countries.

Reading score by population origins

When interpreting performance gaps between native students and those with an immigrant background, it is important to account for differences among countries as regards the socio-economic and educational background of their immigrant populations. There are countries that tent to accept a large number of immigrants with a low degree of selectivity while others have more selective immigrant inflows. As a result, immigrant populations have more skilled or socio-economically advantaged backgrounds in some countries than in others. However, native populations tend to outperform those with immigrant status. Particularly:

Table 3.2: Performance gap on the Reading Scale by Origin

Country	Performance gap between native and first-generation students	Performance gap between native and second-generation students
EU21 average	57	35
Austria	98	55
Sweden	91	53
Finland	89	45
Italy	81	45
Denmark	80	56
France	77	56
Slovenia	74	41
Belgium	71	65
Greece	69	33
Spain	62	27
Germany	61	54
Luxembourg	47	56
Netherlands	44	46
United Kingdom	41	7
Portugal	36	16
Ireland	36	-6
Estonia	35	35
Czech Republic	7	31
Hungary	2	-32
Poland	?	?
Slovak Republic	?	?

Source:PISA 2009 Results: Overcoming Social Background: Equity in Learning Opportunities and Outcomes (Volume 2) - © OECD 2011

Among the 21 European Members, first-generation students present a performance gap about 57 score points behind students without an immigrant background (Table 2). Generally, in most European countries first-generation immigrants are at a significantly greater risk of being poor performers. While first-generation students(foreign born with foreign-born parents) in Austria, Sweden, Finland, Italy and Denmark underperformed significantly compared with native students (more than 80 score-points difference), this gap was small or negligible in the Czech Republic and Hungary (less than 10 score-points difference). This result for Hungary can be explained by the fact that the number of immigrants is especially low, 1.5-2 percent of the population. They mostly come from the neighboring states being of Ethnic Hungarian and they usually have a better economic position than the native population due to their higher rate in active age and being better educated which means a proper position in the labor market. (Judit Maria Tóth, 2007)

On the other hand, although second-generation students were born in the country and therefore they were benefited from the educational system of the host country, they also present a lower performance level comparatively to native students about 35 score points at EU21. However, it should be mentioned that in Hungary and to a lesser degree in Ireland, the second-generation immigrants outperform the native students and this result has been emphasized by Chiswick and DebBurman (2004:361–379): "Some second-generation groups have been found to even outperform native-born students". The explanation for this is related to the fact that second-generation immigrant children do not directly face the hurdles of migration and the difficulties of adapting to new contexts, languages, and schools.

In general, students with an immigrant background tend to have a socio-economic background lower than that of their non-immigrant peers and this explains part of the performance disadvantage among these students.

Reading score by family structure

One of the most important questions that we want to examine in this present thesis is related with the family background and especially the type of family in which young people are growing up. Across countries, a large number of students live in single parent families. It is very interesting to observe the extent to which family structure affects or not students' performance.

Table 3.3: Performance gap on the Reading Scale by Family Structure

Country	Performance gap between students from single-parent families and other types of families
EU21 average	16
Belgium	28
Sweden	28
Ireland	26
Poland	24
Finland	20
Greece	19
United Kingdom	19
Denmark	18
France	18
Netherlands	18
Czech Republic	17
Hungary	16
Germany	15
Luxembourg	15
Slovak Republic	13
Spain	13
Austria	6
Italy	4
Estonia	3
Slovenia	3
Portugal	2

Source: PISA 2009 Results: Overcoming Social Background: Equity in Learning Opportunities and Outcomes (Volume 2) - © OECD 2011

Across the 21 European countries, the performance gap between students from single-parent families and students from other types of families differs widely with a coefficient of variation CV=47% and is, on average, 16 score points. Indeed, children who experienced a parental separation or grew up with a single parent incur educational disadvantages compared with those who grew up with both biological parents (see e.g. Jonsson and Gahler 1997:277–93, McLanahan and Sandefur 1994, for reviews see Amato and Keith 1991:23–41,Cherlin 1999:421–428). Particularly, the gap is large in Belgium, Sweden and Ireland and Poland which is double the average size of the gap in European countries. Bibliography confirms the existence of an educational gap between children from single-parent families and those from two-parent families in Western industrialized countries, including Britain (Kiernan, 1992:213–234), the Netherlands (Borgers, Dronkers, & Van Praag, 1996:147–169, Bosman & Louwes, 1982: 98– 116, Dronkers, 1994:171–191) and Sweden (McNab & Murray, 1985:3–28, Murray & Sandqvist, 1990:89–102).

On the other hand, Austria, Italy, Estonia and Slovenia seem to have the lowest performance gap. Countries having more generous welfare policies show smaller or no achievement gap by family structure. Specifically, in Austria, there has been no achievement gap, a country which has a history of a social protection system with relatively large universal family allowances (Suet-Ling Pong, Jaap Dronkers, Gillian Hampden-Thompson, 2003:681–699). A previous study ranked Austria 6th among 20 Western countries for the most generous universal child benefit scheme (Bradshaw, 1996).

Nevertheless, evidence that students in single-parent families perform poorly might seem to be discouraging because the differences in reading performance by family structure are not significant. This fact signals that there is an independent relationship between family structure and educational opportunities. Therefore, the variation in the differences across countries suggests that the disadvantage associated with single-parent families is not inevitable.

3.2. The Impact of the National Socio-economic situation on Education Level

The aim is to assess the extent to which the average level of development and prosperity is associated with the Educational performance. We can initially suppose that more developed countries are able to offer a more "performant" education system and to develop education policies in order to ameliorate the general education level. But the economic dimension cannot explain entirely the mean performance, because at individual level, socio-economic factors are obviously determinant.

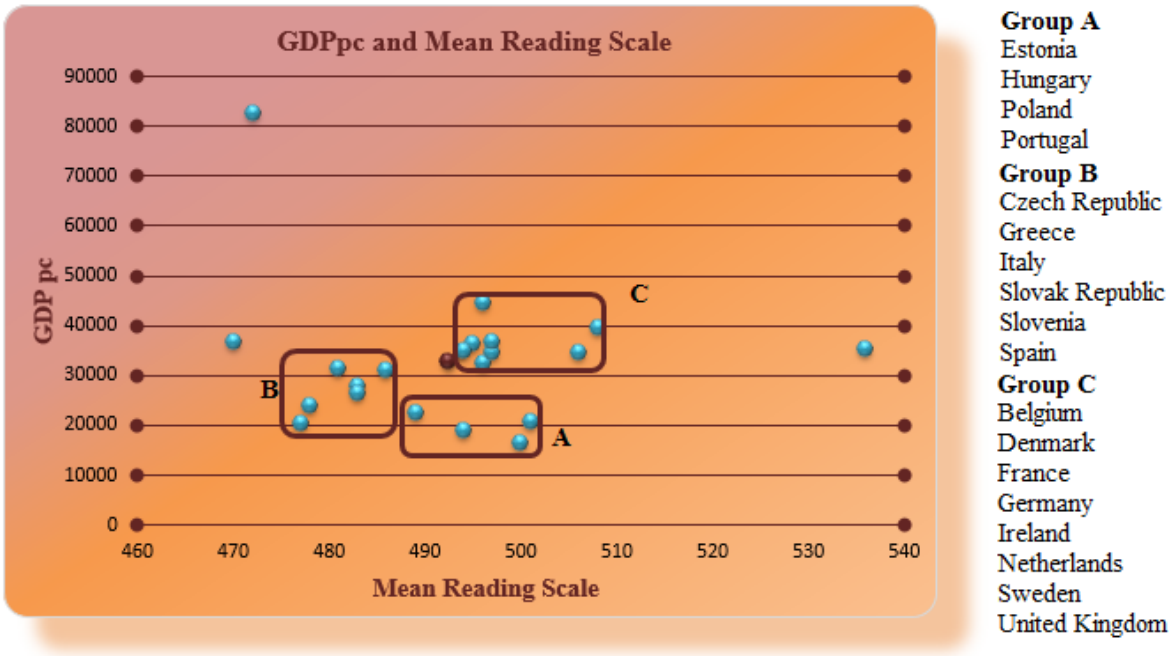
3.2.1Economic Factors

Mean Reading Scale in relation to GDP pc

It is believed that a family's wealth influences the educational performance of children, but that influence varies markedly across countries. Similarly, the relative prosperity of some countries allows them to spend more on education, while other countries find themselves constrained by a lower national income. It is therefore important to keep the national income of countries in mind when comparing the performance of education systems across countries. In an effort to highlight the exact relation of GDP pc and

Mean Reading Performance across the European countries we conclude to three groups of countries:

Graph 3.4: GDP pc and Mean Reading Scale



Source: Own Treatment

Firstly, it seems that there are countries with low GDP pc (clearly < average) and medium-high educational attainment. This group comprises 4 countries such as Poland, Estonia, Hungary and Portugal. Indeed, all these countries have actively implemented a development strategy for higher education. Therefore, they maintain a good educational level even if the nations' wealth and GDP pc is low. Particularly, the above countries have signed the Bologna Declaration of 19 June 1999 aiming to create the "Europe of Knowledge" in order to promote the European system of higher education world-wide (The Bologna Declaration, 19 June 1999). It is then clear that these countries have incorporated the objectives of the Bologna process into their own education system creating more educational opportunities, improving the quality of high education and strengthening their competiveness.

Secondly, there are countries with low-medium GDP pc and clearly low educational attainment. This group comprises 6 countries such as Spain, Italy, Greece, Slovenia, Czech Republic and Slovak Republic. Slovak Republic as well as Czech Republic has the lowest Mean Reading Performance with a clearly low national wealth. It is undisputed that while some education outcomes are favorable, such as the low secondary-school drop-out rate, others have room for improvement. Specifically,

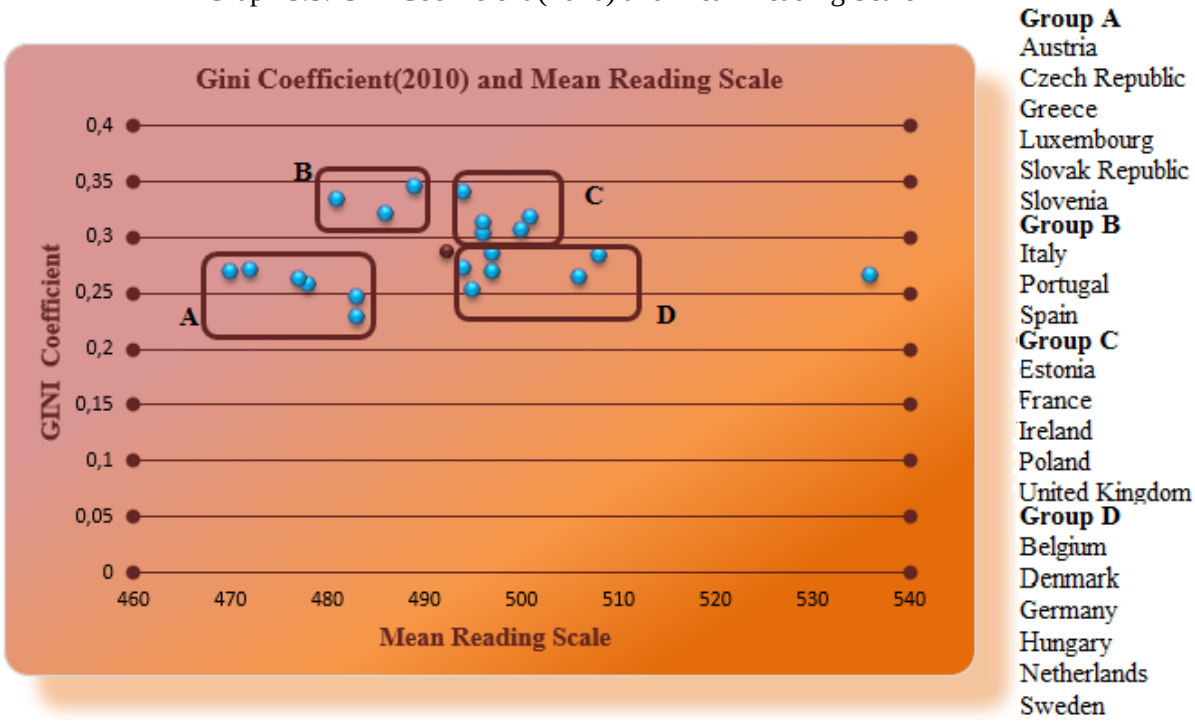
according to Carey, D. (2007) education achievement in Slovak Republic is below the OECD average and strongly influenced by socio-economic background. Roma children, who are mainly from disadvantaged socio-economic backgrounds, have particularly poor achievement while labour-market outcomes are poor for graduates of secondary vocational programmes not leading to tertiary education. Finally, tertiary attainment is low. Therefore, reforms have been made in recent years or are planned to address many of these weaknesses, but much remains to be done. Both Slovak Republic and Czech Republic have experienced decreasing expenditures on education until 2008. These trends signify a decreasing priority given to education, deteriorating the quality of tertiary education. (Martin Kahanec, Martin Guzi, Monika Martišková, Michal Paleník, Filip Pertold and Zuzana Siebertová, 2012). On the other hand, Greece, Spain and Italy are characterized by low educational outcomes with a GDP pc close to the EU21 average. Indeed, in many countries, the crisis has affected education budgets, particularly in those with large public deficits. (European Commission, 2013)

Finally, there are countries with medium-high GDP pc and medium-high educational attainment. This group comprises 8 countries such as Netherlands, Ireland, Sweden, Denmark, United Kingdom, Germany, France and Belgium. It is again observed that these countries have obviously a strong educational system, investing in educational institutions to enhance productivity and foster economic growth. (Educational expenditure statistics, Eurostat, February 2015)

Mean Reading Scale in relation to Gini Coefficient

Over the past decades, most European countries have faced low growth trends and this phenomenon has worsened in recent years. Actually, most individuals are likely to see substantial decreases in their income bringing out concerns about rising inequality and poverty. Crisis has increased the attention to rising inequalities as well as the academic and political interest. Undoubtedly, unequal societies are closely related to a broad range of social problems. A review of 34 studies concluded that the tendency for homicides to be more common in more unequal societies was robust (Hsieh & Pugh 1993:182–202).Wilkinson & Pickett (2007:1965–78) suggested that inequality was also associated with rates of obesity, teenage birth, mental illness, and homicide, low levels of trust, low social capital, hostility, racism, and poor educational performance among schoolchildren, imprisonment, drug overdose mortality, and low social mobility.

Graph 3.5: Gini Coefficient (2010) and Mean Reading Scale



Source: Own Treatment

The pain of the crisis was not shared evenly and the distribution of market income widened considerably during crisis in most OECD countries. Between 2007 and 2010 the average market income inequality across OECD countries increases by 1.4 percentage points (OECD, 2013).Therefore, it is very interesting to signal the income inequalities across the 21 European members and explore the degree at which they are related to reading performance. When observing the data (Graph 4), we can admit that the relation between Gini coefficient and Mean Reading Performance differs widely across the European countries:

Southern European and Mediterranean countries tend to have higher than average inequality. Portugal, Italy and Spain stand out as the countries with the highest inequality with national educational level below the EU21 average. In Spain and Italy, while the income of the top 10% remained broadly stable, the average income of the poorest 10% in 2010 was much lower than in 2007(OECD, 2013).On the other hand, it seems that Estonia, Finland, France, Ireland and Poland suggest a similar profile while they present high levels of educational performance. Indeed, the increase of income inequality was particularly large in some of the countries that experienced the largest falls in average market income such as Ireland, Spain, Estonia, but also in France (OECD, 2013). Finally, the United Kingdom, Ireland and the Netherlands have high

part time employment rates driving inequality in labour market outcomes. (Kaja Bonesmo Fredriksen, 2012)

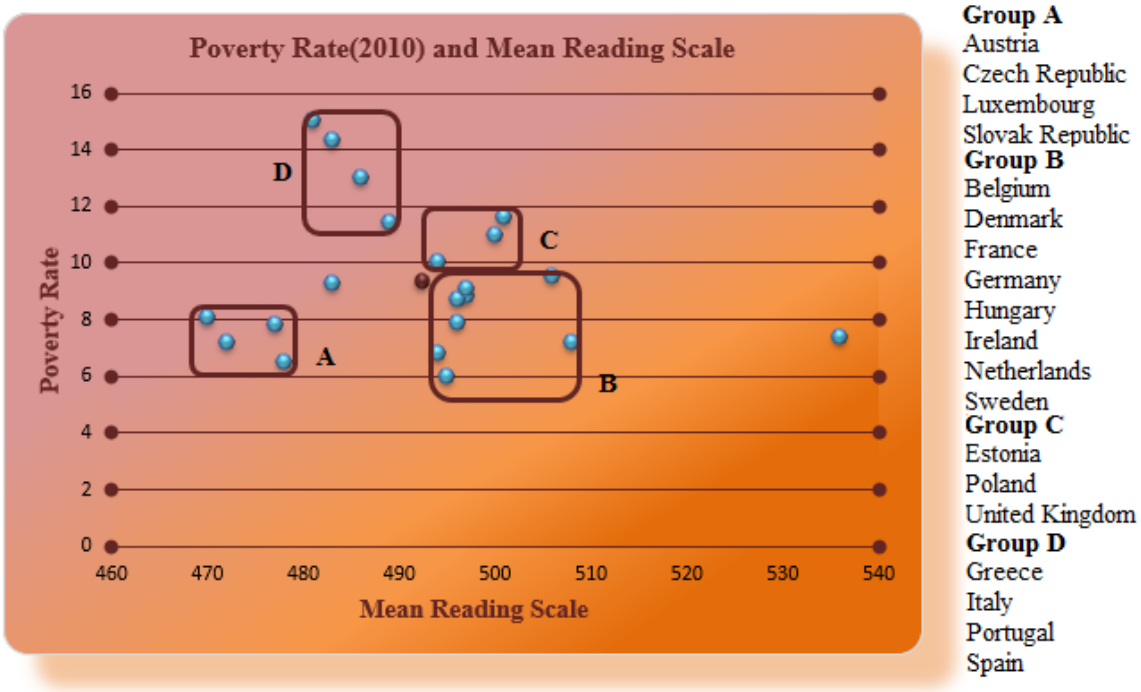
On the contrary, Nordic and Central European countries seem to have the lowest inequality of disposable income. Specifically, countries such as Belgium, Denmark, Germany, Hungary, Netherlands and Sweden seem to have low-medium levels of income inequality with Germany and Netherland to be found really close to the EU21 average. However, this result might be associated with the strong educational system of these countries. By lowering income inequalities, fewer people under-invest in education because of credit market imperfections (Galor and Zeira 1993:35-52; Galor and Moav, 2000:469-497). In other words, equality promotes growth via investment in human capital, because more individuals are able to invest in human capital (Perotti 1996:149-187; Easterly 2001:317-335). However, countries such as Austria, Czech Republic, Greece, Luxembourg, Slovak Republic and Slovenia present also low levels of income inequality with really low educational performance. According to Kaja Bonesmo Fredriksen, over the last 4 years, the biggest change in the Gini happened in the East-European countries where inequality decreased. (Kaja Bonesmo Fredriksen, 2012)

Therefore, we cannot actually associate income distribution with country's level of education. The fact that equity promotes higher education is not consistent with our results.

Mean Reading Scale in relation to Poverty Rate

In most countries, poverty presents a chronic stress for children and families that may interfere with successful adjustment to developmental tasks, including school achievement. Children raised in low-income families are at risk for academic and social problems which can in turn undermine educational achievement. Similarly, children in developing countries are at much greater risk of never attending school.(Patrice L. Engle and Maureen M. Black, San Luis Obispo, 2008). Nevertheless, "employment and education help people escape poverty" (European Commission, Europe 2020 indicators - poverty and social exclusion). Therefore, it is quite interesting to define the exact relationship of the 21 European Member countries' poverty rate and Mean Reading Scale.

Graph 3.6: Poverty Rate (2010) and Mean Reading Scale



Source: Own Treatment

At a first glance, it seems that apart from the Gini coefficient, Poverty Rate in relation to the Mean Reading Performance also differs significantly across EU. Specifically, the Scandinavian countries, the so-called Corporatist countries (Austria, Germany), and the Czech Republic, Slovakia and Slovenia among the ex-Socialist countries are characterized by low levels of poverty (Graph 5). This fact is probably explained accounting for the unemployment rates of each country. The unemployment rate increased in 18 of the EU member states fell in seven and remained stable in both Denmark and Hungary. Germany, Austria and the Netherlands had the lowest youth unemployment rates at 8.1%, 9% and 9.7% respectively[3].Those countries which are "top performers" and have the highest levels of employment in the EU, tend to have low poverty levels as well, including Denmark, Netherlands and Sweden (Orsolya Lelkes, Eszter Zólyomi, 2008). Orsolya Lelkes and Eszter Zólyomi stress that in Austria, France, Germany and Finland regional poverty rates vary little within country and the level of poverty at national level is low or medium in European comparison, suggesting that the regional differences of market incomes are mitigated by the social transfers system. Although it would be reasonable to assume that these countries are characterized by a high educational level, it seems that not all these countries achieve

[3]https://docs.google.com/spreadsheet/ccc?key=0AjI0Eo6IUSaHdDk4QnUtX0VaTlowWHhYOG5MZkpYRWc#gid=8

satisfactory or at least close to the EU21 average educational outcomes (Austria, Luxembourg, Slovak Republic and Czech Republic). On the other hand, countries such as Denmark, Hungary, France, Netherlands, Ireland, Germany, Sweden and Belgium confirm the rule while they succeed brighter educational results, close to or clearly better that the EU21 average.

On the contrary, the risk of poverty tends to be relatively high in the Mediterranean and the Baltic states. This might be related to the fact that these countries provide only few universal benefits, which could mitigate inequalities of market incomes (Orsolya Lelkes, Eszter Zólyomi, 2008). Nevertheless, Orsolya Lelkes and Eszter Zólyomi suggest that the risk of poverty significantly rises with the number of dependent children in the household. Specifically, poverty among families with two children is higher than those with one child. This characterizes the Mediterranean countries and most of the Eastern European countries. The risk of poverty, however, rises substantially among those with three or more children. In countries, including Greece, Italy, Portugal, Spain, just as Hungary and Poland at least one in three persons living in households with three or more children have incomes below the poverty line. (Orsolya Lelkes, Eszter Zólyomi, 2008).

However, a low level of education as well as the higher level of unemployment consists of a major risk factor for monetary poverty. (European Commision, Europe 2020 indicators - poverty and social exclusion). In some Mediterranean countries, Greece, Italy, and Spain, the malaise of high poverty is coupled with low employment where the level of unemployment benefits and social assistance is relatively low. (Orsolya Lelkes, Eszter Zólyomi, 2008). According to Eurostat (year 2012), the highest rate of unemployment was seen in Spain at 26.6% followed by Greece at 26% (recorded for September 2012).Nevertheless, countries suffering from poverty are also considered to maintain low educational level. Indeed, poverty directly affects academic achievement due to the lack of resources available for student success. (Misty Lacour and Laura D. Tissington, 2011).Therefore, it is not surprising that Mediterranean countries are characterized by high rates of unemployment and low educational attainment.

Last but not least, there are countries of medium-high Poverty Rate with medium-high educational attainment. This group comprises 3 countries such as United Kingdom, Poland and Estonia. Specifically, Poland presents a very specific profile. It seems to

have a really high educational level with relatively high rates of poverty. This is really extraordinary but explicable. During transition times workers of industrial factories, owners of small farms during communist times, were forced to return to their villages and work again as farmers. Therefore, agriculture absorbed unemployed urban labour force. As Jan Pakulski indicates in the World Bank analysis, agriculture in Poland was a "safety net", but at the same time it was a "low-income trap" (PARSP, 2005). These processes resulted in overpopulation of small farms, hidden unemployment, poverty and living on social assistance. However, Poland has effectively reformed its educational system after the transition period. (Miriam Beblo and Charlotte Lauer, 2002).

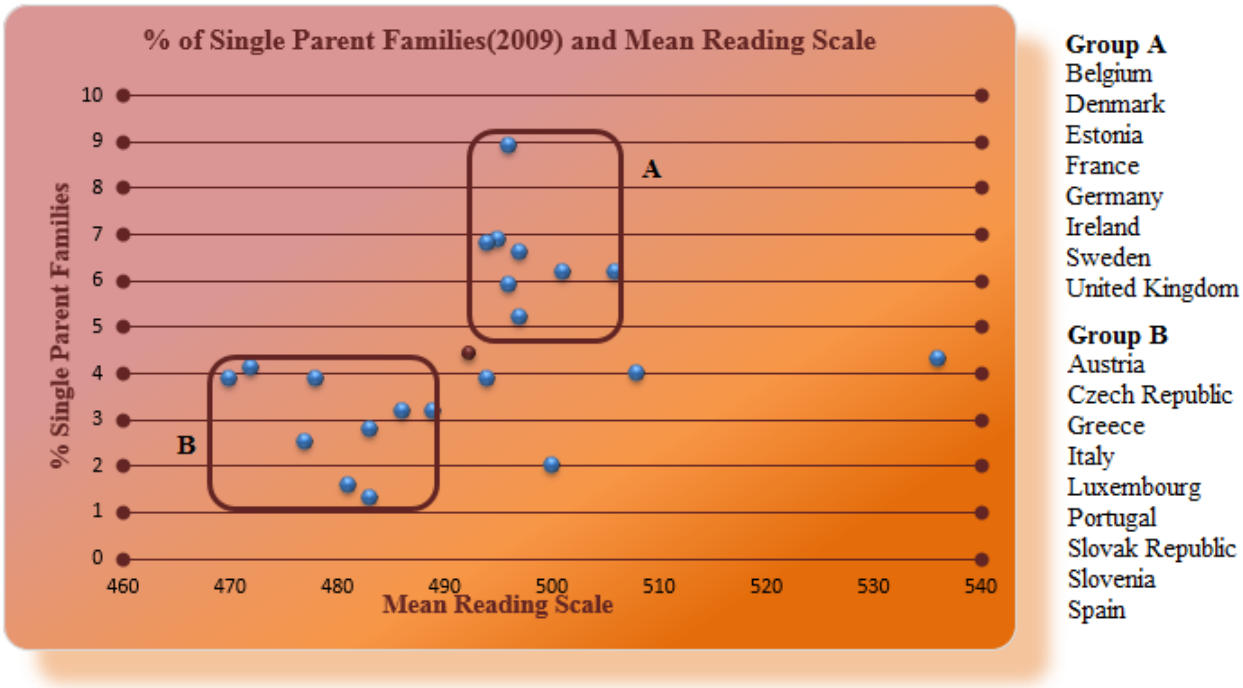
Finally, it would be important to observe that the least unequal societies in Europe tend to have the lowest levels of poverty.

3.2.2 Socio Factors

Mean Reading Scale in relation to Single Parent Families

Family is an important function in every society. Previous research has already shown that children's personality is significantly affected by family's structure. Mulkey et al. (1992) and Kim (2004) have reported that parental expectations, family size and the quality of the parent-child relationship are stronger predictors of children's future academic success than family income. Specifically, most studies have documented that children's educational attainment is negatively affected by parental divorce (Dronkers, 1994:171–191, 1999:195–212, McLanahan & Sandefur, 1994). Children from single-parent (SP) homes score lower on tests of cognitive functioning and standardized tests, receive lower GPAs, and complete fewer years of school when compared to children from two -parent (TP) homes (Bain, Boersma, & Chapman 1983:69-78, Balcom 1998:283-290, Biller 1970:181-201, Chapman, 1977:1155-1158, Daniels, 1986:386-391, Downey, Ainsworth-Darnell, & Durfur, 1998:878-893, Fry & Scher, 1984:167-178, Mandara & Murray 2006:1-12, Milne, Rosenthal, & Ginsburg, 1986:125- 139, Sigle-Rushton & McLanahan, 2004:116-155). In order to adequately understand and examine the impact or not of living with a single parent on children's performance, we are going to highlight the correlation of family form and educational success across and within the 21 European countries of this study.

Graph 3.7: Percent of Single Parent Families (2009) and Mean Reading Scale



Source: Own Treatment

According to our data, it seems that the countries examined in this research are clearly defined in two main groups (Graph 6). To begin with, 8 out of 21 European countries maintain a really high percent of single parent families with a medium-high educational attainment. The general picture of our analysis suggests that the Northern European countries present a very specific profile, especially Ireland –but to a fewer degree- United Kingdom, Denmark and Sweden. It seems that in Northern countries divorce is a more "democratic" phenomenon. They do have the highest rates of divorces while they are still countries of a high educational level. A possible explanation might be the general admission that countries with more generous family policies tend to have highly educated children regardless of family structure. Economic assistance and public welfare policies can make a difference for children, especially those in difficult situations. "The achievement gap between single and two parent families is narrowed where there are family policies aimed at equalizing economic resources between single-parent and other families"(Suet-Ling Pong, Jaap Dronkers Gillian, Hampden-Thompson,2003:681–699).Indeed, Mary Daly and Sara Clavero confirm that family is central to contemporary policy development in Ireland while also in countries such as Germany and Sweden, childcare is being more closely integrated into early education and there is also a trend underway to guarantee young children a place in childcare or

pre-school education regardless of their parents' circumstances (Germany, UK and Sweden).(Mary Daly and Sara Clavero, 2002).

On the contrary, we can clearly distinguish a group of European countries presenting a completely different profile (Graph 6). It seems that 10 out of 21 European countries such as Austria, Czech Republic, Hungary, Portugal, Italy, Slovenia, Slovak Republic, Spain, Greece and Poland maintain a really low percent of single parent families (clearly < EU21 average) with a low-medium educational attainment. According to graph 6, it seems that mainly in Southern and Transition European countries, children have a low-medium educational level comparatively to the rest European countries even if they grow with their both parents. Therefore, we can assume that the low educational level as well as the conservatism of these countries contributes to the low percent of single-parent families. Indeed, Southern countries still fail to "see" lone parents as a unitary category to avoid any sort of categorization that might entail some stigma (European Commission, Europe 2020 indicators - poverty and social exclusion).

Finally, although common sense stresses the negative effects of single parent families on children's academic attainment, our results seem to be completely different when generous national family policies are implemented. It is very interesting that national family policies can almost eliminate the negative effects of single-parent families on children.

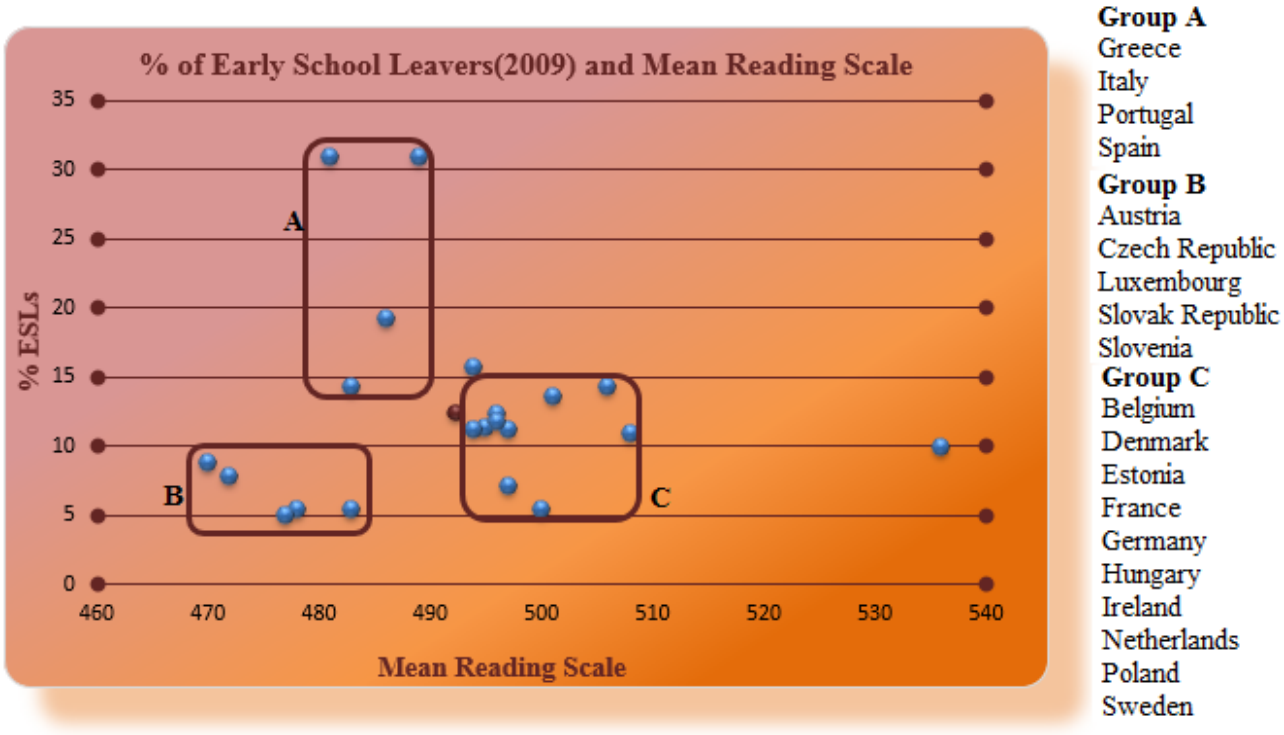
Mean Reading Scale in relation to Early Leavers from Education and Training

Social inequalities in educational opportunities are undoubtedly a feature of our societies. Specifically**,** too many young people are forced to leave education and training prematurely.

> "Confronting school failure is no longer simply about combating inequality in one aspect of life, in the access to one good, but rather it is combating inequality in the access to the key resource in the social structure and the distribution of individual opportunities in life, hence, its centrality"(Mariano Fernández Enguita ,Luis Mena Martínez, Jaime Riviere Gómez, 2010).

In an effort to highlight the exact reasons that lead young people abandon educational training early, we need to define the degree to which the educational level of each European country affects or not the percent of Early school Leavers.

Graph 3.8: Percent of ESLs (2009) and Mean Reading Scale



Source: Own Treatment

At a first glance, the relation between the percent of Early Leavers from Education and Training (ESLs) and the Mean Reading Performance shows that most European countries have a low percent of early leavers from training independently of the educational level of the country. Indeed, educational attainment levels of the population in EU have improved significantly over the last thirty years while EU has set a benchmark to decrease early leavers from education and training to less than 10% by 2020 within the EU strategy.

As mentioned before, we can again observe that there is a group of eastern and central European countries where the percent of early school leavers is low (clearly below the EU21 average) while their national educational level is also very low. This group comprises 5 countries such as Slovenia, Austria, Luxembourg, Slovak Republic and Czech Republic. Indeed, Czech Republic has made progress on reducing the impact of socio-economic background on students' academic performance, reaching high enrolment in early childhood education and care, and achieving higher than average upper secondary attainment rates, especially in vocational education and training. However, 15-year-old Czech students have below average reading performance on PISA 2009, and results have decreased in reading, math and science since 2000.Czech Republic has set long-term education objectives, based on the Europe 2020 strategy, to

reduce the dropout rate to a maximum of 5.5% and to increase the ratio of 30-34 years-old with a tertiary education to 32%.(OECD, 2013)

On the other hand, there are countries with low-medium percent of early leavers from educational attainment and training which have a medium-high educational attainment. This group comprises 10 countries such as United Kingdom, Belgium, Estonia, France, Denmark, Germany, Hungary, Sweden, Poland and Ireland. In Estonia, for example, problems associated with early school leaving are monitored in great detail using the Estonian Education Information System (EHIS), which contains information on every student. In the United Kingdom (Wales), on 1 October 2013, the Welsh Government launched the 'Youth Engagement and Progression Framework Implementation Plan' which strengthens measures to tackle early school leaving. Finally, in France, there have been five campaigns since 2011 by the organization for the inter-departmental exchange of information (SIEI) which has allowed the identification of young people who have left the education system without qualifications[4].

However, Spain, Portugal, Italy and to a lesser degree Greece, present a completely different profile. The high rates of children leaving school prematurely are a true challenge for Mediterranean Countries of Europe. Besides the low national educational level, they also have to confront the risk of early leavers. School failure is currently considered a major problem, particularly in Spain where the rate of failure is above the European and OECD averages (Mariano Fernández Enguita, Luis Mena Martínez, Jaime Riviere Gómez, 2010). Similarly disappointingly conditions are observed in Portugal. Specifically, just 28% of the Portuguese population between 25 and 64 has completed high school, compared with 85 percent in Germany and 91 percent in the Czech Republic[5].

Finally, we can conclude that the educational level does not affect significantly the number of ESL in a country while countries such as Slovenia, Austria, Luxembourg, Slovak Republic and Czech Republic present low rates of ESLs even if their national level of education is low. Therefore, the available educational policies should be implemented by each country in order to struggle this phenomenon.

[4] http://ec.europa.eu/europe2020/making-it-happen/key-areas/index_en.htm
[5] http://portuguese-american-journal.com/school-dropout-is-endemic-%E2%80%93-portugal/

3.3. The Impact of Parental Education

Even if parental education is in itself a socio dimension, this aspect has to be analyzed in detailed because it is one of the main objectives of the present thesis. It is very interesting to examine whether parental education level is correlated with an individual's academic success and even further predicts children's educational attainment. Based on OECD data, we define young population into two groups: young non student population (25-34 years old) and young students in higher education (20-34 years old).

Impact of parental education attainment on young non student population (25-34 years old)

The goal of this analysis is to investigate inequalities in educational attainment by comparing the educational attainment of 25-34 year-old non -students to that of their parents.

To begin with, it seems that young non students coming from parents of high educational level tend to imitate their parents, achieving the same high educational attainment. Indeed, findings suggest that the higher education level of one's parents the more likely one will have academic success (Sandefur, Meier, & Campbell, 2006:525-533, Tavani & Losh, 2003:141-151). Specifically, we can observe (Table 3.4) most young non students with parents highly educated are positively correlated (EU21 average 66%) while those coming from low educated parents seem to have low (EU21 average 30%) and mostly medium educational performance (EU21 average 53%).Therefore, it seems that apart from the fact that the educational level of parents affects the educational level of non-students, the highly educated parents exert a greater positive effect on them than parents of low education.

Table 3.4: Impact of parental education attainment on young non student population (25-34 years old)

Country	Low educational attainment of parents			High educational attainment of parents		
	Low young	Medium Young	High Young	Low young	Medium Young	High Young
EU21 average	30	53	19	5	29	66
Austria	28	63	8	6	49	44
Belgium	31	49	20	5	25	70
Czech Republic	12	84	4	1	36	64
Denmark	22	52	25	14	29	58
Estonia	45	48	7	7	38	55
Finland	14	57	29	6	34	60
France	27	47	25	6	22	73
Germany	38	52	10	6	46	48
Greece	39	46	15	3	26	70
Hungary	23	69	8	1	29	70
Ireland	25	44	31	3	17	80
Italy	44	47	9	5	30	65
Luxembourg	34	47	19	3	16	81
Netherlands	27	46	21	6	31	63
Poland	13	74	13	1	17	83
Portugal	60	23	17	8	19	73
Slovak Republic	33	65	2	1	31	68
Slovenia	15	70	15	2	46	52
Spain	46	25	29	8	17	75
Sweden	14	57	29	6	33	61
United Kingdom	34	43	23	6	25	69

Source: OECD. Transition Ad Hoc Module, EU Labour Force Survey 2009 and Adult Literacy and Life Skills Survey (ALL)

In an effort to investigate more the degree to which parents of low education affect younger's educational attainment, we focus more on data referring to them. Especially, we can observe that countries such as Austria, Czech Republic, Hungary, Poland, Slovak Republic, Slovenia, Finland and Sweden present the highest rates of medium educated young non students in EU21 even if their parents are of low education (in relation to EU21 average). Therefore, it seems that besides the educational level of parents, other factors might play a more significant role in individual's academic success. An equitable education system can redress the effect of broader social and economic inequalities. In the context of learning, it allows individuals to take full advantage of education and training irrespective of their background (Faubert, 2012,

Field, Kuczera and Pont, 2007, Woessmann, and G. Schütz, 2006). On the other hand, it is crucial to stress that countries such as Sweden, Ireland, Finland and Denmark suggest a really special profile where the proportion of highly educated children coming from low educated parents outperforms the proportion of those with low attainment. Therefore, in this case, the low educational level of parents has a small or no effect on their children indicating again the highly organized educational system of these countries. It seems that education systems that enable equitable outcomes are key for both economic prosperity and social cohesion (Woessmann, 2008:199-230). In equitable systems, a child from a less advantaged background does not get an education inferior to that of a child whose parents have higher incomes (Wilkie, 2007). Therefore, quality education for all, results not only in a school system where no one is left behind, but also in a more equitable society where individuals can improve their socio-economic situation on a basis of merit (OECD, 2012).

Finally, comparing the data across European countries (Table 4), the most possible conclusion can be that young non students coming from highly educated parents have very little possibility to fail academically. Therefore, the impact of highly educated parents on their children seems to be really strong. However, it would be even more helpful to examine whether the students in higher education are eventually affected by parental education level.

Impact of parental education attainment on young students in higher education (20-34 years old)

As regards young students in higher education, it is very interesting to investigate whether their parents present also a high educational background as well as the degree of their impact on them. Generally, parental educational level is an important predictor of children's educational and behavioral outcomes (Davis-Kean, 2005:294–304; Dearing, McCartney, & Taylor, 2001:1779–1793; Duncan, Brooks-Gunn, & Klebanov, 1994:296–318; Haveman & Wolfe, 1995:1829–1878; Nagin & Tremblay, 2001:389–394; Smith, BrooksGunn, & Klebanov, 1997:132-189). However, other researchers such as Eric F. Dubow, Paul Boxer and L.Rowell Huesmann suggest that parental educational level had no direct effects on child educational level or occupational prestige. (Eric F. Dubow, Paul Boxer and L.Rowell Huesmann, 2009:224–249).

Table 3.5: Impact of parental education attainment on young students in higher education (20-34 years old)

Country	Proportion of 20-34 year old students in higher education by parents' educational attainment		
	Low Parent	Medium Parent	High Parent
EU21 average	18	38	46
Austria	7	48	45
Belgium	11	31	57
Czech Republic	13	46	41
Denmark	10	23	67
Estonia	3	29	68
Finland	5	27	68
France	13	40	47
Germany	6	36	58
Greece	20	49	31
Hungary	17	39	45
Ireland	32	36	32
Italy	27	48	25
Luxembourg	11	47	42
Netherlands	16	26	58
Poland	21	51	29
Portugal	54	17	30
Slovak Republic	0	65	35
Slovenia	5	61	34
Spain	32	25	43
Sweden	16	33	51
United Kingdom	25	24	51

Source: OECD. Transition Ad Hoc Module, EU Labour Force Survey 2009 and Adult Literacy and Lifeskills Survey (ALL)

At a first glance, we can observe that students in higher education are not exclusively coming from families of higher educational profile. Even if most highly educated students have also parents of academic attainment, it seems that a remarkable proportion of them are coming from parents of medium educational level. Specifically evidence here does not support the common theory held by researchers that parental education is related to the individuals academic success (Bakker et al., 2007:177-192; Bogenschneider, 1997:718-733; Hill et al., 2004:1491-1509) for the countries studied. Parents from any education level can predict that the student works hard. Perhaps the students from parents of lower educational levels want to be able to gain the education their parents did not achieve (Hill et al., 2004:1491-1509).

More specifically, most of the highly educated students in 8 out of 21 countries of EU examined, (Austria, Czech Republic, Greece, Ireland, Italy, Luxemburg, Poland, Slovak

Republic and Slovenia) come from a moderate educational environment. On the other hand, Portugal is a special case where interestingly most of the highly educated children are coming from low educated parents (57%).

> "The explosion in higher education is inseparable from the massification of access to education at basic and secondary levels. It was also the outcome of strong and effective investment via the public sector in democratizing the school system since 1974. Moreover, it was a result of a new and intense demand for education by families in their daily quest to improve their children's educational lot. The vertiginous drop in the Portuguese birth rates since the second half of the 1970s is a pointer to this watershed, which went hand in glove with a new notion of childhood and infancy and their relationship to schooling." (Guy Neave, Alberto Amaral, 2011).

However, Greece, Ireland, Italy, Poland, Spain and United Kingdom present – but to a lesser extent- a similar profile with Portugal while the rates of highly educated students with parents of low academic attainment is above the average.

Therefore, it seems that parents' educational level affects students' performance not as much as we would believe. Actually, the role of the educational system is even more significant. The highest performing education systems are those that combine high quality and equity. In such education systems, the vast majority of students can attain high level skills and knowledge that depend on their ability and drive, more than on their socio-economic background (OECD, 2012)

3.4 Conclusion

Consequently, after a thorough investigation based on the collected data, we can confidently claim that significant spatial inequalities as regards the educational level characterize the EU. It is even more obvious that both the socio and economic factors affect considerably the young non students' educational performance but in a varying degree. It is therefore a really huge challenge to confirm or reject the above results through our own statistical survey.

Apparently, some of our data interestingly contradict commonly accepted ideas concerning the object of this research. Specifically, it is generally believed that Eastern and Central European countries have low educational performance comparatively to northern European countries. However, Central-Eastern European countries present a strong educational system particularly after transition times retaining the rates of early

school leavers significantly low. Even if Poland, Estonia and Hungary are characterized by low GDP and poverty, they are still countries with a high educational level. Continuously, northern European countries refute the hypothesis that the form of family affects children's educational performance because despite the high rates of divorces, children in northern Europe still are among the most educated in Europe. Finally, our data reveal that the impact of parental educational background is not as strong as we used to believe, with Denmark, Finland, Ireland and Sweden suggesting that highly educated children coming from low educated parents outperform those with low education. Specifically, Portugal is a case of great interest while the most highly educated Portuguese come from low educated parents. Eventually, it seems that only after a thorough systematic analysis, we can confirm or reject the dominant assumptions on our object of research.

CHAPTER 4: A TYPOLOGY OF EUROPEAN COUNTRIES AS REGARDS THE EARLY LEAVERS FROM SCHOOL'S RISK

Expectations for a child's educational attainment seem to be influenced by a number of socio-economic factors. In other terms, socio-economic background can be considered a good variable for younger's educational performance and even more for early school leaving. Having a higher socio-economic status has long been associated with greater educational attainment(Curtis & McMillan, 2008, Homel et al., 2010, Robinson & Lamb, 2012, GHK, 2005, Traag & van der Velden, 2011:45–62) while Australian research indicates that there is a 20 percentage point gap in retention rates between young people from lower and higher socio-economic groups (Robinson & Lamb, 2012).

The research is going to present a geographical analysis on socio-economic inequalities and early school leavers to clearly identify the special characteristics and the specific factors that affect educational performance across EU. In order to highlight better the spatial inequalities as regards educational attainment across EU, we attempt to examine the extent at which early school leaving can be considered as a consequence due to the number of diverse interrelated socio-economic inequalities concentrated in particular districts. Therefore, it seems to be highly efficient to indicate the spatial distribution of socio-economic inequalities in relation with the spatial distribution of early school leavers and understand better the districts' socio-economic dynamics.

4.1 METHODOLOGICAL APPROACH-RESEARCH METHODOLOGY

4.1.1 Description of variables-Rank variables

In an attempt to simplify the process of analysis of the survey data, we used 7 variables which were converted into 7 new variables (rank variables) holding the rank number of the initial variables through SPSS RANK command. Specifically, 7 new variables were created expressed in the same scale from 1 to 21 (the total number of European Union Countries investigated) with 1 the best position on the variable considered. The number of the variables selected is not incidental at all, while it will later contribute to the implementation of Factor Analysis.

Therefore, seven new variables have been created that we are going to briefly present.

(a) Economic variables

RGINI_2010 is the ranked variable of GINI_2010 which is referring to income inequality across European countries in 2010.

RPovRate_2010 is the ranked variable of PovRate_2010 expressing the percent of poverty across the 21 European Countries.

Both RGINI_2010 and RPovRate_2010 variables allow us to define the economic status of each country, contributing significantly in the analysis conducted.

(b) Socio variables

RSingle_PF is the ranked variable of Single_PF reflecting the percent of single parent families across Europe.

On the other hand, RErL_09 is the ranked variable of ErL_09 which describes the percent of early school leavers across European Countries under study.

RLP_LY refers to the ranked variable LP_LY while the RHP_LY describes the ranked variable HP_LY, explaining the degree at which the children's low educational performance is affected by the low parental educational level and the highly educated parents respectively.

Finally, it is very interesting to study the RLP_ HY, the ranked variable of LP_HY in order to define whether the younger's high educational attainment is affected or not by the low parental educational level across and within European countries examined.

4.1.2 Factor analysis and classification process

(a) Factor Analysis

Factor analysis is commonly used in the fields of psychology and education (Hogarty K, Hines C, Kromrey J, Ferron J, Mumford K. 2005: 202-26) as well as a lot of other scientific fields. It is considered as an adequate method for interpreting self-reporting questionnaires (Byrant FB, Yarnold PR, Michelson E. 1999:54-66). Factor analysis is a multivariate statistical procedure that has many uses. Firstly, it reduces a large number of variables into a smaller set of variables (also referred to as factors). Secondly, it establishes underlying dimensions between measured variables and latent constructs,

thereby allowing the formation and refinement of theory. Thirdly, factor analysis provides construct validity evidence of self-reporting scales. Thompson (2004, p.:5) adds:

> "…..factor analysis is intimately involved with questions of validity … Factor analysis is at the heart of the measurement of psychological constructs."

Factor analysis (FA) consists of "a variety of statistical techniques whose common objective is to represent a set of variables in terms of a smaller number of hypothetical variables" (Kim & Mueller, 1978:9). More elaborately, Tabachnick and Fidell (2007:607) explain that FA includes:

> "….statistical techniques applied to a single set of variables when the researcher is interested in discovering which variables in the set form coherent subsets that are relatively independent of one another. Variables that are correlated with one another but largely independent of other subsets of variables are combined into factors."

There are two major classes of factor analysis: Exploratory Factor Analysis (EFA), and Principal Component Analysis (PCA).According to James Dean Brown, FA is the Principal component analysis and the Exploratory factor analysis collectively (James Dean Brown, 2009:26-30).There are more types of factor analysis than these two, but these are the most used (Field 2000, Rietveld & VanHout 1993).

Principal Component Analysis

Principal component analysis is probably the most popular multivariate statistical technique and it is used by almost all scientific disciplines. It is a multivariate technique for transforming a set of related variables into a set of unrelated variables that account for decreasing proportions of the variation of the original observations. The rationale behind the method is an attempt to reduce the complexity of the data by decreasing the number of variables that need to be considered. If the first few of the derived variables (the principal components) among them account for a large proportion of the total variance of the observed variables, they can be used both to provide a convenient summary of the data and to simplify subsequent analyses. In other terms, PCA is a tool that allows us to identify underlying variables (factors) that explain the pattern of correlations within the pre-selected set of observed variables and most of the variance observed in the initial set of variables. The goals of PCA are to extract the most important information from the initial data, to compress the size of the data set by

keeping only the most important information, to simplify the description of the data set and to allow an easier analysis of the observations and variables' structure.

Explanatory Factor Analysis

Exploratory factor analysis attempts to bring intercorrelated variables together under more general, underlying variables. More specifically, the goal of factor analysis is "to reduce the dimensionality of the original space and to give an interpretation to the new space, spanned by a reduced number of new dimensions which are supposed to underlie the old ones" (Rietveld & Van Hout, 1993:254) or to explain the variance in the observed variables in terms of underlying latent factors" (Habing 2003: 2). In EFA, the investigator has no expectations of the number or nature of the variables and as the title suggests, is exploratory in nature. Therefore, it allows the researcher to explore the main dimensions to generate a theory, or model from a relatively large set of latent constructs often represented by a set of items. (Pett MA, Lackey NR, Sullivan JJ, 2003, Henson RK, Roberts JK., 2006, Thompson B, 2004, Swisher LL, Beckstead JW, Bebeau MJ. 2004:784-99) Thus, Explanatory factor analysis offers not only the possibility of gaining a clear view of the data, but also the possibility of using the output in subsequent analyses (Rietveld & Van Hout, 1993).

Principal component analysis versus Explanatory factory analysis

The main difference between these types of analysis is related to the way with which communalities are used. In principal component analysis, it is assumed that the communalities are initially 1. In other words, principal component analysis assumes that the total variance of the variables can be accounted for by means of its components (or factors), and hence that there is no error variance. On the other hand, factor analysis assumes error variance. In this respect, explanatory factor analysis seems to be more correct, as it is normal to split variance up into common variance, unique variance and error variance (Field 2000, Rietveld & Van Hout, 1993). This is reflected in the fact that in explanatory factor analysis the communalities have to be estimated, which makes EFA more complicated than principal component analysis, but also more conservative.

Practically, however, "the solutions generated from principal component analysis differ little from those derived from factor analysis techniques" (Field, 2000). Moreover as shown by Rietveld & Van Hout (1993), "the difference between factor analysis and principal component analysis decreased when the number of variables and the

magnitudes of the factor loadings increased". The choice between factor analyses thus depends on the number of variables and the magnitude of the factor loadings. Another important difference is that component analysis does not require a theoretical model as regards the choice of the initial variables because its objective is to detect find the interrelation between them. For this reason, we are going to implement Principal Component Analysis (PCA) which requires at least three observations per initial underlying variable which is the case with our model (7 variables for 21 observations-countries).

(b) Cluster Analysis

Subsequently, in order to achieve the interpretation of our results in a spatial level, and cerate our new European map based on the 21 classified countries-members of European Union, we proceed to a classification implementing cluster analysis with the factors extracted from PCA. Cluster analysis groups data based only on information found in the data that describe the objects and their relationships. The goal of this analysis is that the objects within a group should be similar or related to one another and different from the objects in other groups. The greater the homogeneity within a group and the greater the difference between groups, the better or more distinct is the clustering.

Limitation of the Analysis

It is obvious that, although the study is referring to the 2009 year when the countries-members of European Union were 27, our analysis is limited to 21 countries due to deficiency of data both in Eurostat and OECD. However, this restriction does not prevent us from achieving adequate and reliable conclusions.

4.2. Typology of the 21 countries: results of the combined PCA and Cluster analysis

To begin with, in order to condense our data and reduce the number of variables examined, we implemented principal component analysis using our new ranked variables. Two new conjunctive indicators have been extracting through the Kaiser's stopping rule without losing a large amount of total information. Specifically, Kaiser's stopping rule states that only the factors with eigenvalues over 1 should be considered

in the analysis. Specifically, the Eigen value <1 criterion suggests 2 principal components, corresponding to 70% of the total inertia (Table4.1). Therefore, the loss of information is relatively limited and less than 30% which is an acceptable level. Both new indicators seem to be significant with the first one reflecting 43,8% of variance and the second 26.6 %.

Table 4.1: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3,068	43,833	43,833	3,068	43,833	43,833	2,95	42,141	42,141
2	1,86	26,568	70,401	1,86	26,568	70,401	1,978	28,259	70,401
3	0,665	9,506	79,907						
4	0,578	8,26	88,167						
5	0,368	5,261	93,428						
6	0,289	4,123	97,551						
7	0,171	2,449	100						

Extraction Method: Principal Component Analysis.

At the same time, table 4.2 reveals that our statistical model is really significant while the proportion of each initial variable's variance that is explained by the selected principal components (communalities) is apparently high (more than 50%).

Table 4.2:Communalities

	Initial	Extraction
RGINI_20	1	0,557
RSingle_	1	0,740
RPovRate	1	0,703
RErL_09	1	0,804
RLP_LY	1	0,795
RHP_LY	1	0,688
RLP_HY	1	0,641

Source: Own Treatment

In addition, the Kaiser-Meyer-Olkin measure of sampling adequacy confirms that our set of initial variables is actually coherent with a value of 0,700 (Table 4.3). Therefore, the reduction from seven to two dimensions is a satisfactory solution.

Table 4.3: KMO and Bartlett's Test

KMO and Bartlett's Test	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0,697

Source: Own Treatment

Consequently, in an attempt to achieve a simple structure, we implemented PCA with Varimax rotation method, assuming that our new conjunctive indicators are uncorrelated. The PCA analysis has generated new predicted values, called as component scores for each ranked variable. In other terms, there are two new hypothetical variables, Components 1 and 2 reflecting values that look like correlation coefficients. These coefficients give us the relative "loadings" of each initial variable as regards the principal factors (components) which contribute to a more adequate interpretation of the new variables. The correlation coefficients in Table 4.4 are the correlations between all variables and components 1 and 2.

Table 4.4 : Rotated Component Matrix[a]

	Component	
	1	2
RLP_LY	0,883	
RErL_09	0,841	
RPovRate	0,804	
RGINI_20	0,714	
RSingle_		0,841
RLP_HY		-0,797
RHP_LY	0,518	0,647

Source: Own Treatment
Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.[a]
a. Rotation converged in 3 iterations.

When interpreting the two new hypothetical variables, we conclude to some really interesting information. Specifically, component 1 suggests that five out of seven variables are highly and positively related to component scores. We can observe that the

percent of low educated young with parents of low educational attainment along with the risk of early school leaving are clearly high when poverty rate and income inequalities are simultaneously very important. Therefore, we can apparently assume that financial hardship affects negatively younger's educational attainment.

On the other hand, component 2 requires particular attention while it reveals a completely different profile. In this case, there is a really high percent of single parent families while at the same time, poverty rates and income inequality seem to be limited a fact that explains the low risk of early school leaving and the low percent of poorly educated younger's with low educational background. Finally, it is of a great interest to point out that there is a really significant percent of highly educated children with parents of low educational performance while there are still a few low educated children coming from families of academic background.

On the basis of these two latent variables, we proceed to a "classification" of the 21 countries-members of EU.

Table 4.5: Groups of countries

	Groups of countries			Total Number of countries
	A	B	C	
Number of countries	***6***	***7***	***8***	***21***
Countries in each group	Estonia Germany Italy Portugal Spain U.K.	Belgium Denmark France Finland Ireland Netherlands Sweden	Austria Czech Republic Greece Hungary Luxembourg Poland Slovak Republic Slovenia	

Source: Own Treatment

The results of this method, based on K-means clustering, led us to the classification of 21 countries in three groups with fairly good distribution (quite the same number of countries in each group). According to Table 4.6, these groups present a different profile with unique and distinct characteristics among the 21 European countries.

Table 4.6: Cluster Number of Case

	Groups of countries		
	A	**B**	**C**
Number of countries	*6*	*7*	*8*
	Mean Values		
GINI_2010	**0,324**	0,278	0,264
Single_PF	4,4	6,1	3,1
PovRate_2010	11,6	8	8,9
D9D1_2010	9,6	6,4	6,7
PovRate_Youth	13,8	15,4	10,6
PovRate_Adult	11,2	6,8	9,0
ErL_2002	24,0	12,7	10,0
ErL_2009	20,2	11	7,8
LP_LY	45	23	25
LP_HY	16	26	11
HP_LY	7	7	2
HP_HY	64	66	67
LP_HS	25	15	12
HP_HS	46	54	38

Source: Own Treatment

In an attempt to translate the results of our analysis, we ascertain a depressing profile when studying the embarrassing outcomes concerning the first group of countries. It is obvious that countries of group A (United Kingdom, Germany, Estonia as well as Italy, Portugal and Spain) are confronted with the problem of poverty (mainly in adults) and income inequalities which probably lead to high rates of early school leavers even if they seem to decrease from the beginning of the decade to 2009 year. Indeed, Southern and Mediterranean countries tend to have higher than average inequality, as we noted in Chapter 3. Therefore, we suggest that the increased rates of low educated young people with parents of also low educational level (Table 4.6) are closely and positively correlated with the increased trend of poverty and income inequality across the countries.

On the contrary, the Northern and Central European countries (Group B) present a different and definitely better view on the EU Chapter. Apparently, Finland, Sweden, Netherlands, Denmark, Ireland, Belgium and France suggest an alternative form of family and society with children frequently growing up in single parent families and younger struggling to poverty when declined to wean and become emotionally and

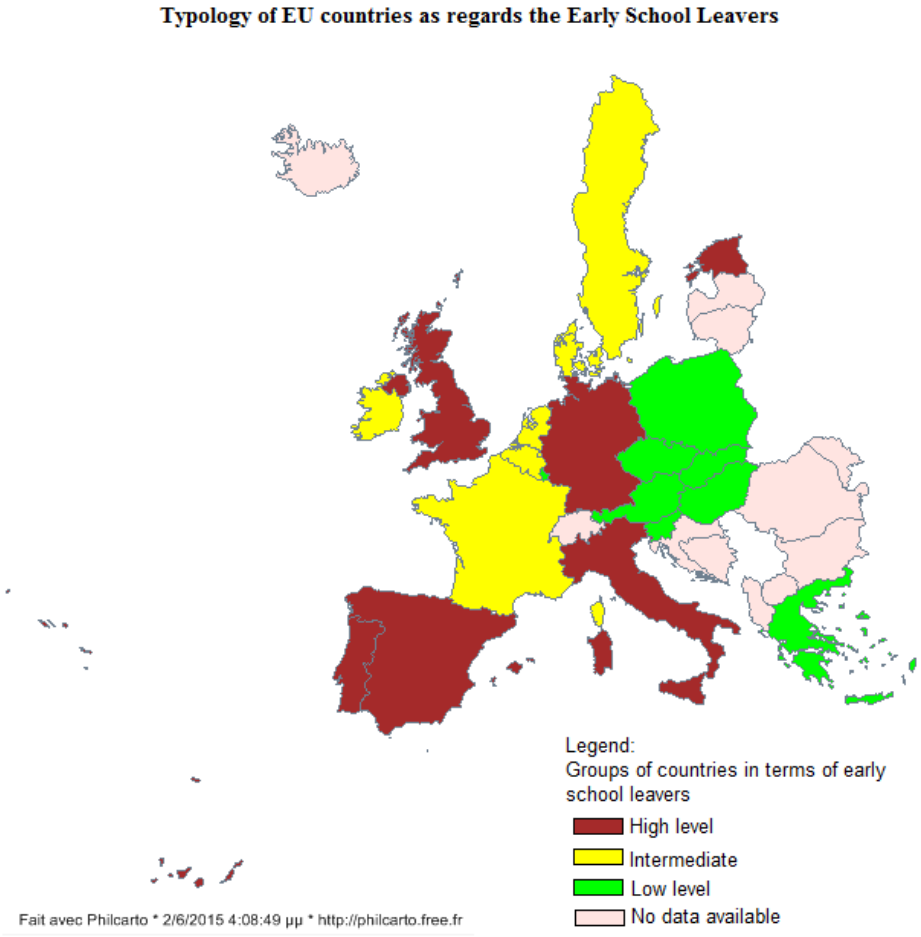
financially independent still too young. Nevertheless, financial hardship and income inequalities are greatly limited in relation to the first group of countries contributing considerably in maintaining extremely low rates of children dropping out from school (barely half of the first group). It is expected that the negative effect of growing up in a single-parent family is less strong in societies or cohorts where nontraditional family forms are more common, as single-parent families will be less stigmatized by a hostile environment and children experience divorce or separation of their parents as a less unusual event (Wolfinger, 2003:337–353). We therefore expect that the negative relationship between school's share of single-parent families and children's educational performance is less strong in societies with a higher share of single-parent families. Finally, it is of significant interest the fact that even if children are raised in a low educational environment, they successfully achieve academic performance (Table 4.6)

The group C (Czech Republic, Slovenia, Slovak Republic, Hungary, Luxembourg, Poland, Austria and Greece) is characterized by the lowest rates of early school leavers in the 21 European countries examined both at 2002 and 2009 year with a decreasing trend, a clear confirmation of the results presented in chapter 3. It is even more essential to note that the third cluster of countries maintains the lowest rates of income inequality and poverty mainly in young people while they support the most conservative societies as regards the prevailing family model. Indeed, Czech Republic, Slovakia and Slovenia among the ex-Socialist countries are characterized by low levels of poverty, as we pointed in previous chapter. Last but not least, according to our results (Table 4.6), the southern and eastern part of Europe confirms the positive relation of parental educational level and children educational performance while maintain the lowest rates of young people who disprove it.

Finally, we can conclude that in all three cases, the high parental education attainment has a systematically a significant positive impact on younger's educational performance: in average around 65% of young people coming from family with high parental education has also a high education level.

One of the most determinant differences between the three groups of countries (see following map) concerns the early school leavers. It is obvious that the first group is the most concerned by this problem while the two other groups are obviously in a better situation and they were able during the period 2002 – 2009 to diminish the dropout.

Map 4.1: Typology of EU countries as regards the Early School Leavers



Source: Own Treatment

4.3 CONCLUSION

To sum up, through principal component analysis and cluster analysis we achieved to translate our statistical data and classify them into three groups of European countries as regards their unique characteristics. Out typology of the 21 countries of EU illustrates successfully the spatial distribution of socioeconomic inequalities and the extent at which these differences affect the educational attainment across the countries.

Specifically, as a confirmation of previous studies completed (Chapter 1), we suggest that both poverty and income inequalities are crucial in the evolution of a strong educational attainment. Indeed, children who grow up in low income families tend to have lower educational attainments than children from more affluent families. It is no coincidence that countries with the lowest rates of poverty and income inequality seem to have almost eliminated the phenomenon of early school leavers. Therefore, we can suggest that poverty is closely related to high rates of early school leavers. At the same time, the role of family's educational background seems to be undisputable. The survey affirms once again the accuracy and validity of the literature presented in Chapter 1 with the parental education level affecting significantly younger's educational level.

On the other hand, our results oppose the theory that family structure is an important factor of children's education. Actually, we indicated that unlike literature, the impact of family structure do not impact children's educational attainment as much as we used to believe. It seems that national educational systems as well as national family policies overcome the negative effects of divorces on children.

Eventually, this study attempted firstly to indicate the European households' main socio-economic factors affecting academic attainment of young people and secondly the importance of the district's socioeconomic dynamics on the phenomenon of early school leavers. After conducting a systematic analysis, we can strongly support the undisputable role of socioeconomic status on youngers' educational achievement mainly through parental educational attainment and financial status as well as the significance of spatial and national characteristics of each country.

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