ECONOMIC CRISIS, SOCIAL CLASS AND TECHNOLOGY USAGE IN SPAIN

Cristóbal Torres-Albero (UAM)

José Manuel Robles (UCM)

Stefano De Marco (UCM)

Mirko Antino (UCM)

Abstract: This paper studies the effect of the current economic crisis on technological inequalities in Spain (Digital Divide and Digital Inequalities). Specifically, we focus on how this process of economic recession affects Internet usage and e-shopping adoption by Spanish citizens according to their social class. Studying to what extent there have been changes in the evolution of Internet usage and access to services such as e-shopping involves asking questions regarding the impact of these economic circumstances on the digital possibilities of citizens and, therefore, regarding their material and social wellbeing. To meet this goal, a statistic analysis was performed, using the data of the "Survey on the equipment and use of information and communication technologies in households" by the Spanish National Statistics Institute (INE). These analyses show that the economic crisis does not seem to have a direct impact on the behaviour observed, although there does seem to be an indirect influence that informs us of the way technological inequalities are structured according to social class in Spain.

INTRODUCTION[1]:

In this study we shall attempt to answer the following question. Is there any observable change in Internet usage habits or in Internet access levels among middle class families during the economic crisis Spain has been suffering since 2008?

The literature on the rise of the Information and Knowledge Society warns of the importance of Internet usage penetration among all population groups as a factor of social advancement and transformation. The Digital Divide thus becomes an essential barrier for the proper development of this new social scenario. It has also been observed that the Internet uses known as BAUI (Beneficial and advanced uses of the Internet) generate competitive advantages for families and individuals who use them. To study the extent to which there have been any changes in the evolution of Internet usage and access to BAUI over the economic crisis period involves asking questions regarding the impact of these economic circumstances on the digital possibilities of citizens, and therefore on their material and social wellbeing. Our interest in this paper focuses on the impact of the economic crisis on the digital possibilities of the different social classes and, specifically, the middle class.

Making use of the different yearly phases of the "Survey on the equipment and use of information and communication technologies in households" by the Spanish National Statistics Institute (INE), we analyze the evolution of Internet usage in Spanish families in the high, high middle, low middle and low classes to observe whether there are changes in their pattern of evolution during the period of the economic crisis. Likewise, we have selected one of the most significant economic BAUI, e-shopping, to analyze whether, during this period of time, there have been any changes in habits regarding advanced Internet uses among families of these social groups.

According to our study, there are no changes in the evolution of Internet usage penetration in Spain, by social classes, that are attributable directly to the economic crisis. The same goes for e-shopping usage. However, our study does point to one very relevant circumstance: the rise in digital inequalities during this period, which could be an indication of how the economic crisis may indirectly be affecting Internet usage among the Spanish middle classes.

This paper is structured as follows. First, we describe the theoretical framework that forms the basis of our study on Digital Inequalities and the Digital Divide. Second,

[1] This paper is part of project CSO2012-35688, Ministry of Economy and Competitiveness of Spain.

we describe the methodology used to answer our question, as well as the results of the analyses carried out. Third, we present different possibilities for answering our research question taking as reference the results of our empirical study.

THEORETICAL FRAMEWORK:

The economic crisis affecting Spain, particularly since 2008, is part of one of the deepest cyclical global recession scenarios in developed societies. Indicators show it. Spain's Gross Domestic Product (GDP) dropped from 3.11 to -1.38 from 2007 and 2008. Spanish debt rose from 36% in 2007 to 100% of the country's income in 2014. In 2012, unemployment levels surpassed 20% of the active population and rose to over 70% among the youngest tiers of the population (16-19 year-olds).

These circumstances have lead to a significant increase in social inequality. The Gini coefficient shows a worrying polarization of wealth, which towards the population groups with most resources (high classes). Thus, this coefficient in Spain was four points higher than the European average in 2011. The s80/s20 ratio shows that the gap between the 20% of the population most income and the 20% of the population with least income is increasing. In Spain's closest geographic context, only Lithuania, Latvia and Romania show a greater polarization.

What happens, in this context, with the middle classes, that is, those that are in between those with most and those with least income in Spain? According to the Spanish Government's Tax Authorities, in 2011, the average annual salary decreased, for the first time, to €22,642. The percentage of employed workers reached 58%, whereas prior to the start of the economic crisis, the percentage was more than 67%. For its part, income below the minimum wage increased by 5.6%, showing a significant transfer from the middle class to the low class. This circumstance meant that many families that had been reasonably well-off were now part of the three million people who are under the threshold of severe poverty. Prior to the start of the crisis, the people in this financial situation were half those in this situation now.

In such an adverse context, the digital sphere becomes a source of indicators that extends our perspective of the influence and evolution of the economic crisis in Spain. For instance, e-shopping, one of the emerging modes of consumption with the greatest possibilities in the Information and Knowledge Society, should be analyzed in this context, as it makes it possible to discern to what extent Spanish citizens, especially those belonging to the middle classes, devote resources to the purchase of goods and

services through the Internet. Likewise, the rate of Internet usage penetration among the population is an indicator to be taken into account within the framework of the economic crisis, as it tells us to what extent Spanish families reduce expenses renouncing to this service and limiting, at the same time, the economic possibilities offered by the Internet (e-banking, etc.). This is the general goal of this paper. However, in order to ensure a correct interpretation of the effect of the economic crisis, it is necessary to interpret the usage and uses of the Internet within the framework of the literature which has analyzed this sphere for over a decade.

From the Digital Divide as differences in the use of the Internet usage to Digital inequality as differences regarding Beneficial and Advanced Internet Uses (BAIU)

The Digital Divide refers to "the distance between people who have and people who do not have access to the Internet" (Van Dijk, 2006, pp, 221) and came into use in the nineties to describe the empirical evidence of the unequal penetration of the Internet in US households. The first time it appeared in writing is, according to Gunkel (2003), in the study carried out by the US National Telecommunications and Information Administration (NTIA, 1999).

Already then, a significant number of specialists (Hoffman and Novak, 1998; Strover, 1999; Walsh, 2000; Attewell, 2001) showed that inequalities in Internet access were strongly influenced by geographical variables such as city size and geographic place of residence. Likewise, they showed that better positioned social groups (young people, men, educated people or people belonging to the middle or high classes) had higher rates of Internet access than less advantaged population groups (the elderly, people with low levels of education, women or those with low financial resources). This fact turned the study of the Digital Divide into meeting space for social scientists interested in warning of the potential risks associated with this unequal development of Internet access.

However, in academic terms, the term Digital Divide is somewhat ambiguous. Van Dijk (2006) points out some epistemological aspects of this concept that generate a biased perspective of the type of inequalities they aim to describe. Thus, he maintains, among other points, that this concept suggests an overly simplistic division between the two population groups, people with access and people without access, which is, in addition, too static and, in appearance, very difficult to remedy. From this point of view, it is a deterministic perspective according to which the problem of digital inequalities

results from having or not having access to the Internet. That is, the provision of the resource would solve this form of inequality.

One of the main obstacles for this concept to become a valid operational resource for the study of digital inequalities is the assumption that access implies use. Soon after, many studies showed that, despite having access to the Internet, whether at home or in public spaces fitted with the necessary equipment, many citizens did not make use of this technology. Around the year 2003, specialists had already focused their interest on the reasons why certain people or social groups did not make use of the Internet despite having access to the resource. This new perspective of the Digital Divide showed once again that the differences in Internet use are determined by social variables, whether racial (Hoffman et al., 2001), gender-based (Bimber, 2000; Cooper and Weaver, 2003) or defined on the basis of level of education (Bonfadelli, 2002), as well as another set of variables related with Internet skills (DiMaggio et al., 2004; van Deursen and van Dijk, 2009).

As from the first years of this century, this field of study has turned its attention to a more complex analysis perspective in the relationship between Internet and inequality. One of the most interesting efforts has been aimed at analyzing to what extent certain Internet uses generate competitive advantage for its users (Van Dijk, 2005). Studies have looked at issues such as how the Internet allows citizens to express their demands and interests in a simpler and more efficient way, how the Internet is a key factor for obtaining better goods and services and how the use of this medium gives users access to competitive resources. This kind of Internet use has been termed *Beneficial and Advanced Internet Uses* (BAIU). From this point of view, Digital Inequality would be the result of the difference between those citizens that make use of this kind of Internet service and tools and those who do not have the resources to make use of them.

There are several taxonomies that attempt to order the elements that potentially affect the capacity of citizens to use BAIU (Dimaggio and Hargittai, 2001; Van Dijk, 2006). One of the first in the field suggests ordering the dimensions of digital inequality into four categories: technical means, autonomy; social and institutional context; and digital skills and purpose of use of the Internet (Dimaggio and Hargittai, 2001).

These last two authors consider that the limitations in hardware, software and type of Internet connection become an important barrier for using this technology without restrictions. Therefore, it is speculated that technological equipment is a

fundamental factor for understanding what services a citizen uses and, therefore, what advantages from Internet use they may attain. Second, along these same lines, the place from which the Internet is used, as well as control over which pages can be used, have been deemed essential factors for analyzing what kind of Internet uses citizens engage in. Using the Internet in public spaces such as cyber-cafes, computer centres or from work can involve a loss of autonomy for the user, affecting the kind of activities carried out online. Likewise, Internet use in public spaces often means being subject to restrictions on pages or Internet services they are allowed to use. The limitations in equipment and autonomy of use are material restrictions that involve significant limitations for gaining potential benefits from Internet use.

Thirdly, social and institutional contexts have been deemed determining factors of the type of use made of the Internet. Citizens living in a technologically stimulating environment are quicker to develop a favourable disposition to using the Internet, as well as greater abilities to get more out of the use of this tool. For instance, adults with young people in their home are more likely to use the Internet more frequently and for a broader variety of purposes than people who live in less stimulating technological contexts (Rojas et al., 2004). Likewise, in a favourable institutional context where there are public strategies for the technological education of citizens, it also becomes a key factor for improving citizens' abilities to access advantages of Internet use.

Lastly, one of the factors that has attracted most attention among digital inequality specialists is the type and level of citizen's Internet. It is deemed that the greater and more varied the knowledge and skills in the handling of the tool, the more likely it is that they can access potentially beneficial services. The literature (van Deursen and van Dijk, 2009) has generated two great categories for analysing digital skills. One the one hand, Internet Expertise and, on the other hand, Internet Proficiency. The first of them measures the degree of incorporation of the Internet in the user's daily life. But it is deemed that an analysis of the time the citizen has been using the Internet, the variety of places where he/she connects to the Internet or the frequency they connect, enables us to measure their Internet skills. On its part, the variety of Internet uses made by an Internet user is also an indirect indicator of the technological skills of the Internet user. Even thought the literature has generated techniques that attempt to measure Internet use skills directly (Van Dijk, 2006; Hargittai, 2010), the concepts of Internet Proficiency and Internet Expertise are, given the complexity of the ways of measurement, the most common ways of evaluating digital skills in the literature.

The literature shows that each and every one of these dimensions is marked by social and demographic variables such as age, level of education, sex or social class. Thus, we have empirical studies (Robles, Torres and Molina, 2010) that allow us to affirm the social nature of the dimensions that explain Digital Inequality. It is here where the concept "Digital Inequality" takes on its genuine dimension. As shown in the studies indicated, the social and demographic variables are, together with the four dimensions outlined in this section, key factors for explaining the type of use that citizens make of the Internet. We find that very often the Beneficial and Advanced Internet Uses are engaged in more frequently by citizens with more material and educational resources. That is, BAIU provide potential advantages to citizens who were already more advantaged. Thus, the most relevant proposal of the studies on Digital Inequality is that the use of BAIU reinforces and broadens existing social inequalities in a given society to the extent that it provides advantages to citizens with a better social position. The corollary of this argument is that, according to the empirical studies (DiMaggio et al., 2004), this type of inequality, far from reducing, is increasing in developed countries.

In brief, both the study of the Digital Divide and the analysis of technological inequalities, based on the BAIU, have shown the importance of the financial and social conditions of citizens in these kinds of inequality. Age and social class are the social and economic variables that have been most analyzed (Robles, Torres and Molina, 2010). According to this study, the higher the social class the greater the level of Internet usage penetration. Likewise, the younger the citizens, the more likely for them Internet users. On their part, high class citizens are those which profit to a greatest extent from the Beneficial and Advanced Internet Uses. The same is the case with younger citizens, among which the use of BAIU is more common.

The aim of this study is to analyze to what extent the economic crisis context strengthens, reduces or bears no influence upon this dynamics of digital inequality according to social classes. For this purpose, we analyze the evolution of Internet usage in Spain, by social class, during the two years prior to the economic crisis (2004 and 2005) and during the two central years of this economic process (2010 and 2011). Likewise, we have selected e-shopping as a case of BAIU that is particularly beneficial in economic terms. We also analyze to what extent there are changes in the patterns of use of this service prior to and during the economic crisis according to this same

variable. With this analysis, we aim to delve deeper into the knowledge of the digital dimension of the economic crisis in Spain.

METHODOLOGY:

In this section we analyze, in the first place, the differences in patterns of evolution of Internet Access and of e-shopping behaviours shown by Spaniards before and after the onset of the economic crisis. For this study we have segmented the Spanish population both by age groups[2], which is a key variable for explaining the acquisition of certain online conducts, and by social class[3]. This latter variable will allow us to see the effects of the economic crisis on the online conducts mentioned above in the Spanish middle class. For this purpose, we use low frequency time series analyses by means of ANOVA analysis. The data used are taken from the "Survey on Equipment and Information and Communication Technologies Use in households" of the National Statistics Institute (INE) in the years 2004, 2005, 2010 and 2011. Second, using the same data, we look at the influence of the age and social class variables on the adoption of e-shopping before and during the economic crisis. For this purpose, four path analysis models shall be implemented and confronted.

The data

To achieve our research goals, we have used data from the National Statistics Institute – INE- (2011) obtained through the "Survey on Equipment and Information and Communication Technologies Use in households. These data, which collect information regarding Internet access and the different Internet uses by Spaniards, including e-shopping, cover a time period from 2004 to 2011. For this work, we have used the variables “Internet Access” and “Purchase of products or services through the Internet”. Both variables are dichotomous and both measure the behaviours subject of the questions as regards the 3 months prior to the surveys.

[2] The variable included in the INE survey questionnaires has been used. Despite being continuous, it has been transformed into an ordinal and the categories it comprises are: 16 to 24 y/o, 25 to 34 y/o, 35 to 44 y/o, 45 to 54 y/o, 55 to 64 y/o and 65 to 74 y/o. The “age” variable is, as explained in the body of the text, one of the variables with the greatest incidence on Internet usage. However, the goal of this study are social classes and, therefore, its use is aimed solely at serving as a control variable.

[3]This variable has been constructed multiplying the numerical value associated with the level of studies of the subject by the number of devices in the household (computers, TV sets, mobile phones, DVDs, etc) and dividing them by the number of members of the household. This continuous variable has also been transformed into an n ordinal variable, with the following categories: Low Class, Low Middle Class, High Middle Class and High Class. This transformation was operated based on the quartiles of distribution of the numeric variable.

The surveys of the different years share the same methods and sampling criteria, the same phrasing of the questions on Internet Access and e-shopping and, lastly, the same reply categories. The data are thus respectful with the criteria to be followed for the construction of time series.

The eight samples selected refer to the Spanish population, including both sexes, of ages between 16 and 74 and living in family households in national territory. One person only per home was interviewed, selected previously at random through a computerized method.

The sample design was carried out across the Spanish territory, through a three-step sampling process, stratified by the units of the first step. These units coincided with census sections. The units of the second step are main family households. The third step selected one person in each household aged 16 or over. The criterion of stratification used was the size of municipality the section belonged to. In addition, for each autonomous community, an independent sample was designed to represent it. The sample is distributed across the autonomous communities applying a compromise allocation between the uniform and the proportional to the size of the community. Between the strata, the allocation is proportional to their size, also maintaining that the number of sections per strata in each autonomous community is a multiple of four. For those households where no phone contact was known, personal interviews were carried out with CAPI methodology. For households for which a phone contact was known, CATI interviews were held. Both questionnaires included the same data and used the same variables.

Chart 1 shows the number of subjects for each sample and the proportion of subjects interviewed by CAPI and CATI. We can point out that the sample sizes are not exactly the same. However, the homogeneity in the sampling method across the different years of data collection makes it compatible to use these same data to construct a time series. Lastly, we should point out the use of weighting factors to consider subjects and not households. For this purpose, we have used an elevation factor calculated by the National Statistics Institute.

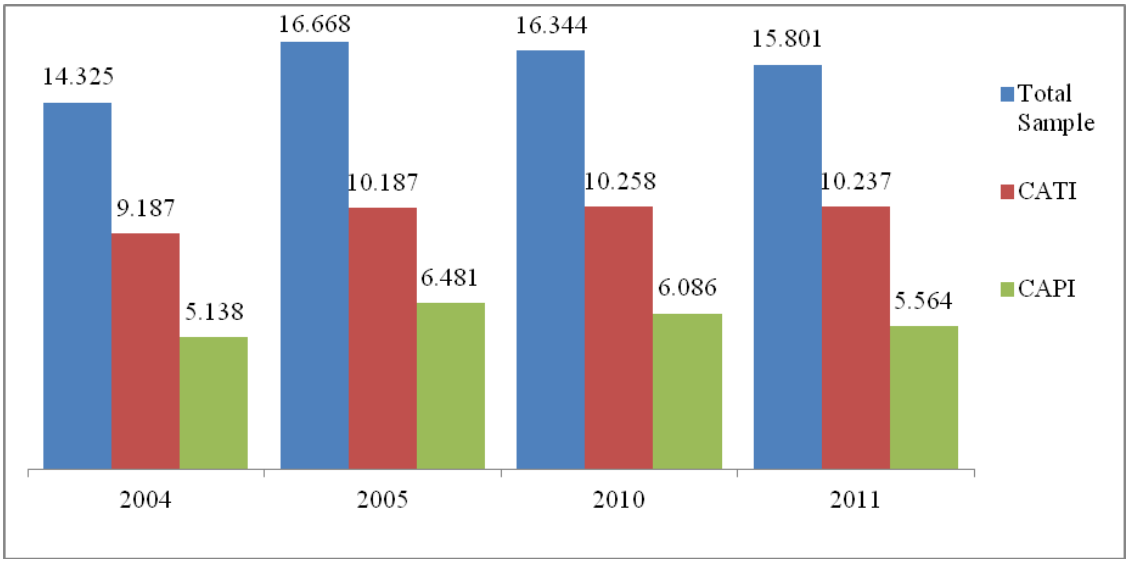

Chart 1: Sample sizes of the 4 samples considered and division according to type of interview. Source: INE.

Analysis

To analyze the low frequency time series, such as those presented in this paper, it is not possible to implement prediction models such as, for instance, the Arima model. However, it is possible to draw conclusions on the evolution of data from the observation of trends of the series themselves. Together with these observations, Anova tests have been performed on a factor, in order to point out differences in percentages either between the years or between the different control variable categories, which are significant.

To look at the evolution of Internet access and e-shopping penetration rates, first, two Anova analyses were implemented, both with the year of the survey as the grouping factor and, as dependent variables, Internet access in one case and e-shopping in the other. The dependent variables are dichotomous variables. Therefore, instead of comparing measurements, the analysis compared percentages. Thus, percentage differences in access and e-shopping were observed between the different years, pointing out significant year to year differences.

At a second stage, the Anova analyses were repeated, segmenting the percentages based on the categories comprising the variables “age” and “socio-economic status”. Several analyses have thus been implemented, one per survey year, to find out whether, in the same year and between the different grouping variable categories, there have been significant differences in Internet access and e-shopping

percentages. In addition, to guarantee the validity of the comparison between all the percentages, subsequent Anova analyses were implemented between the years, selecting, for each analysis, only those subjects that responded to a specific category of those that comprise the Status variable. This way, a total of 38 Anova analyses were performed[4].

For space reasons, we cannot present all the indices of the different analyses implemented. Therefore, we will only mention those percentage differences that were significant and those that weren't, based on the Anova analyses.

Results by "Internet access"

Chart 2 shows Internet access percentages within Spanish society, between 2004 and 2005 and between 2010 and 2011.

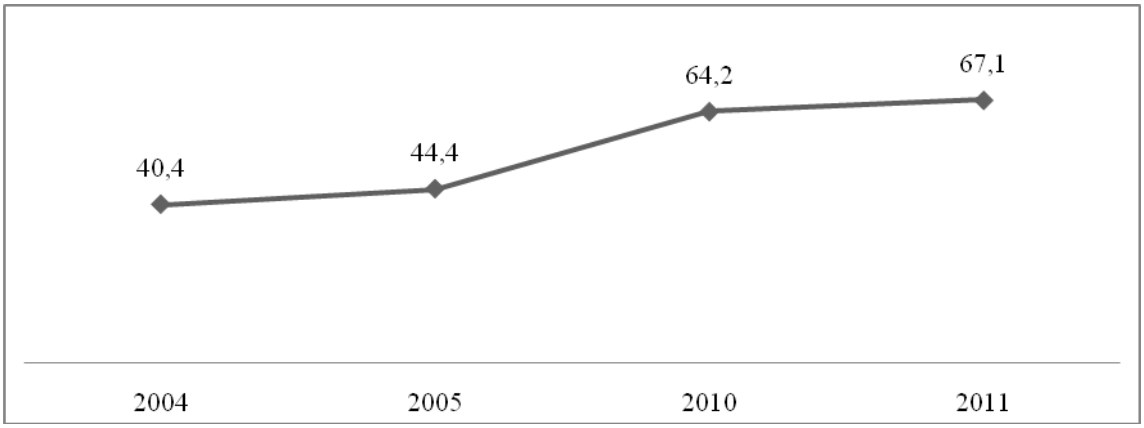

Chart 2: Internet access penetration rates (2004/2005-2010/2011). Source: INE.

All the percentages shown in the chart are significantly different from one another. The data seem to support the thesis that the Digital Divide is reducing, as Internet access rates have risen from 40.4% in the year 2004, to 67.1% in the year 2011. The chart also shows a growth trend, which would imply a process of gradual disappearance of the digital divide phenomenon.

[4]For each of these analyses a Leven variance homogeneity test has been performed. According to the results of this test, the general goodness of fit of the model has been observed either from the F test of the Anova, in the case of the homogeneous variances, or from the Welch statistical test, in the case of non-homogeneous variances. All analyses implemented have been significant. Thereafter, when confronting percentage pairs, combined with the different categories of the three socio-demographic variables or to the survey year, the Tukey indices have been used, in the case of the homogeneous variances and the Games-Howell indices in the case of having non-homogeneous variances.

However, this trend is qualified upon analyzing the evolution of Internet usage by age and social class. Chart 3 shows Internet access evolution based on the different age groups.

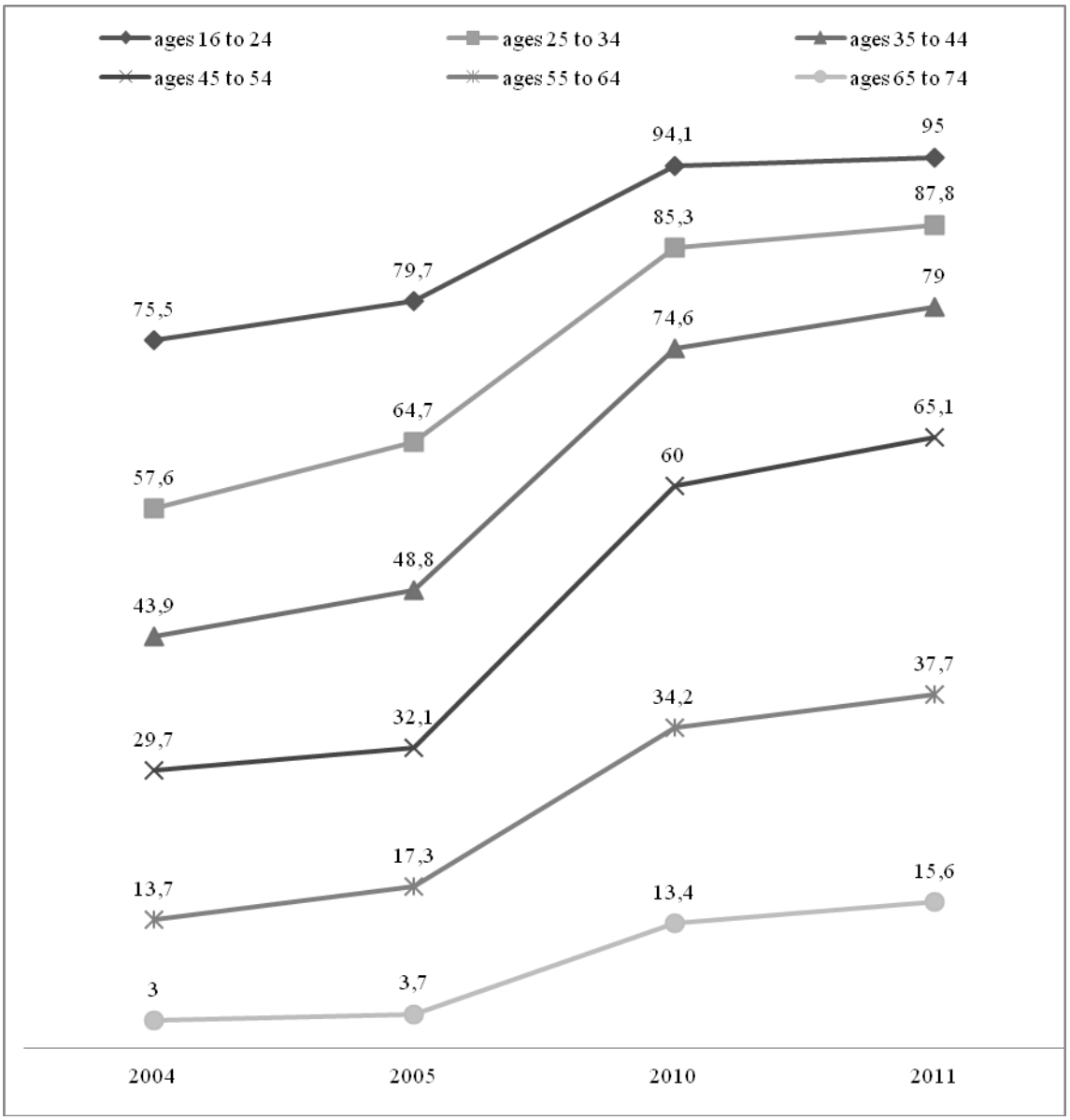

Chart 3: Internet access penetration rates by Age (2004/2005-2010/2011). Source: INE.

The results of the Anova analyses tell us that, among the different categories of the age variable, and every year, all Internet access penetration rates are significantly higher than the others. If we consider the last year in the series, 2011, the data show a consistent difference between the access levels reached among the population segments ranging from 16 to 24 years of age and 25 to 34 years of age, 95% and 87.8% respectively, compared to the 55 to 64 and 65 to 74 age groups, 37.7% and 15.6%,

respectively. In addition, these two latter age groups show a slower growth rate, evolving only by 24% and 12.6% respectively, compared to the 32% and 36% growth in the 25 to 34 and 35 to 44 and 45 to 54 age groups.

Chart 4 shows the evolution percentages of Internet access according to the social class of the people surveyed.

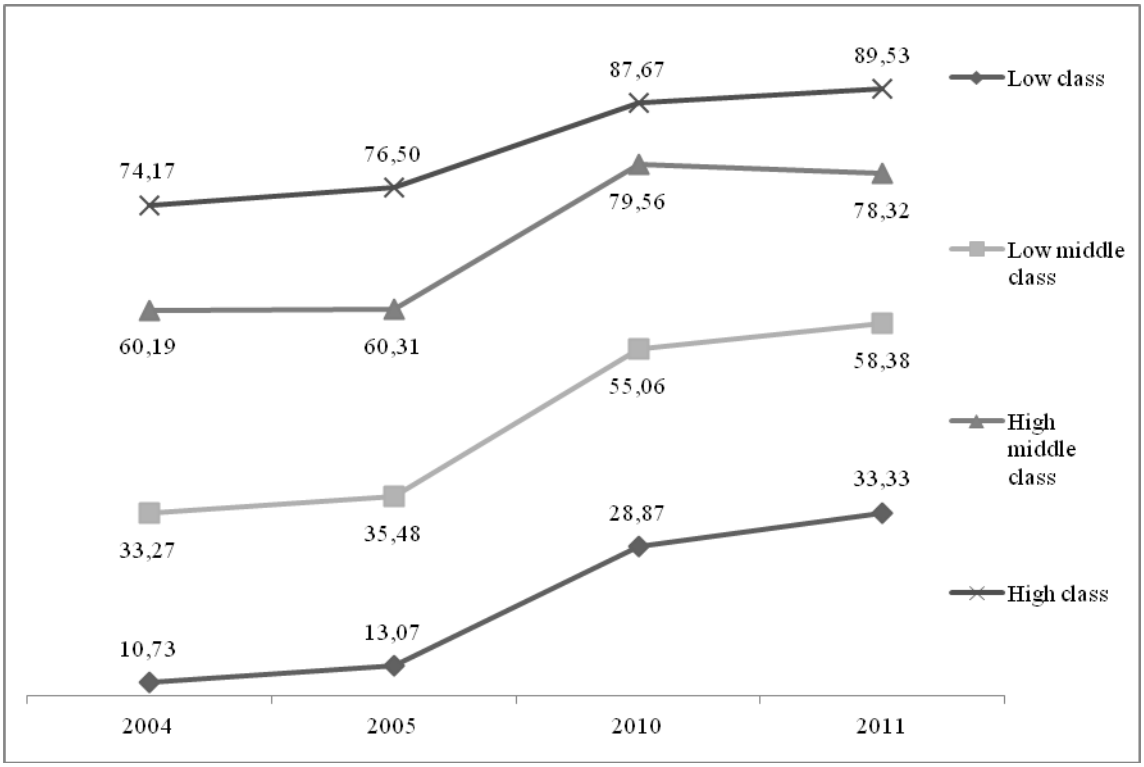

Chart 4: Internet access penetration rates by social class (2004/2005-2010/2011). Source: INE.

Although there are no significant differences between the pre-crisis years and the years of the economic crisis, we do find substantial differences among the different populations segments. Although the highest growth rates are among low middle class (25%) and low class (23%) Spaniards, the differences between these and the high and high middle classes range between 25 and 60 percentage points. Indeed, in these two latter population segments, Internet access reached 89% and 78% respectively in 2011. On the other hand, that same year, the percentage of Internet users of low and low middle social classes was 58% and 33%.

Results by "E-shopping"

Chart 5 shows online service and product purchase trends in Spain between the years 2004/2005 and 2010/2011. We should point out that these percentages do not refer to

the Spanish population but to Spanish Internet users. The Anova analyses have pointed to significant differences between the percentages of every year that makes up the time series.

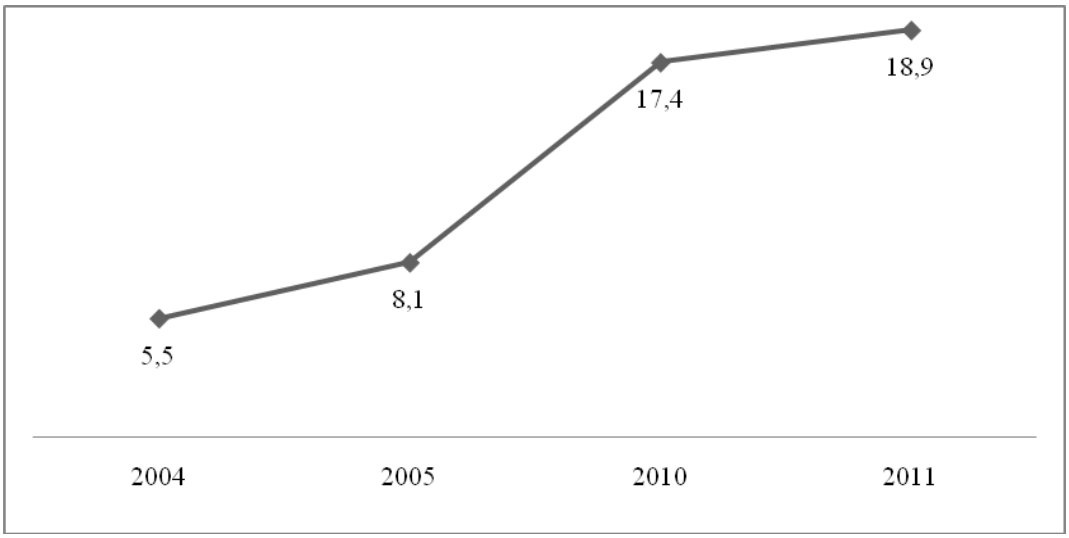

Chart 5: Rate of penetration of e-shopping in Spain (2004/2005-2010/2011). Source: INE.

We can note an evolution of the penetration rate of this kind of Internet use, which goes from 5.5% of all Internet users in 2004 to 18.9% in 2011.Also in this case, the data seem to support the hypothesis of a downward growth trend of the level of digital inequality in Spanish society.

Again though, a more specific analysis qualifies this initial conclusion. Chart 6 shows e-shopping penetration rates among Spanish Internet users according to the different age variable categories.

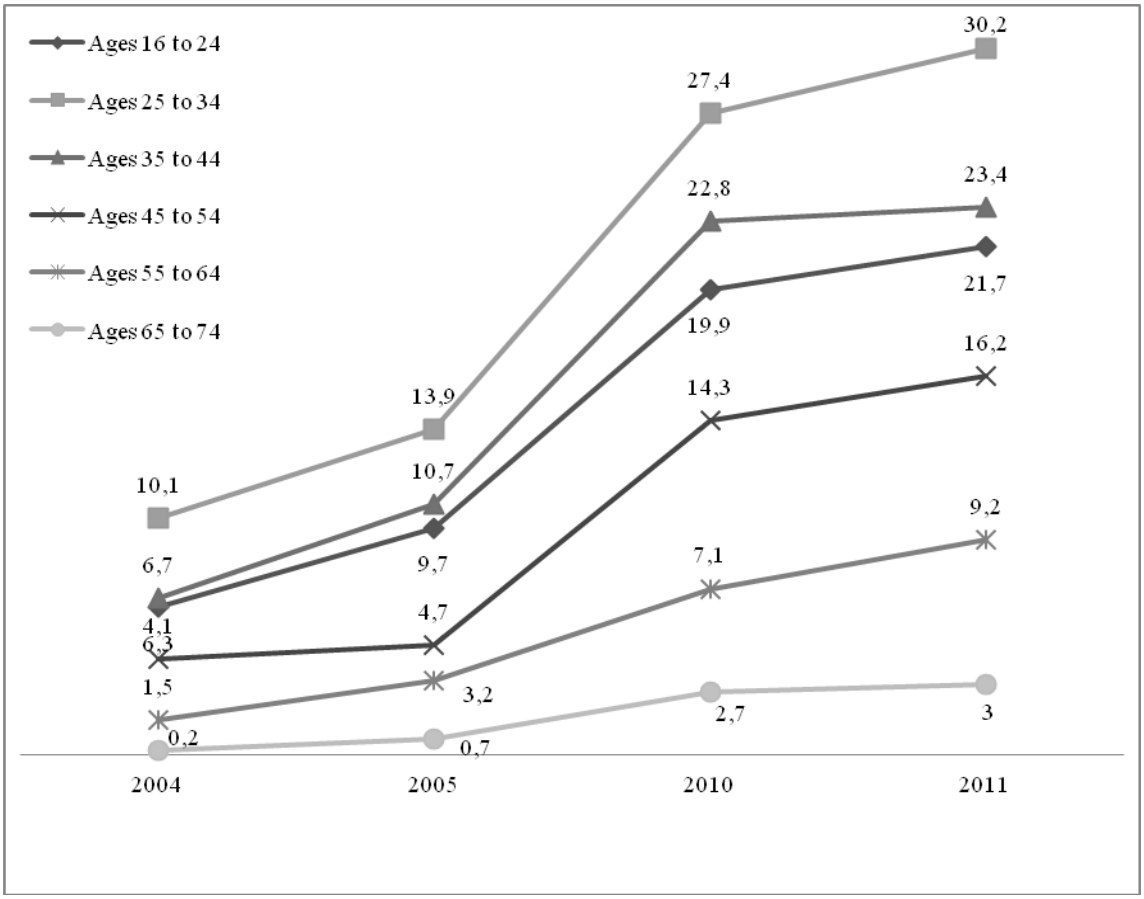

Chart 6: E-shopping penetration rates in Spain by age (2004/2005-2010/2011). Source: INE.

According to the Anova analyses carried out, all percentages resulted significantly different between one another, both considering comparisons between the age variable categories and comparisons between the years. The data show that the highest percentage of e-shoppers is among Internet users aged between 25 and 34. 30.2% of these had made a purchase online in 2011. This percentage also registered the highest growth since 2004, with a 20.2% growth. Internet users aged 16 to 24 and 35 to 44 show similar percentages and growths. Both segments started off with percentages of around 6% of Internet users in 2004, and reached 21-23% in 2011.

The 45 to 54 year old Internet user age segment went from 4.1% in 2004 to 16,2% in 2011. We note that the line that characterizes this age group goes from being close to the two older age groups to a greater proximity to the Internet users aged 16 to 24 and 35 to 44 years of age.

Internet users aged 55 to 64 showed, in 2004 and 2005, e-shopping penetration rates very similar to those characterizing Internet users aged 45 to 54. However, by 2010, the two age sections show different patterns of evolution. Whereas Internet users

aged 45 to 54 reached percentages of 16,2% in 2011, those aged 55 to 64 only reached 9.2%.

The age group with least Internet users who engage in e-shopping is, as expected, citizens between the ages of 65 and 74. The evolution of this group was very modest, rising from 0.2% to 3%.

Lastly, chart 7 gives us indications of the penetration of e-shopping among Internet users using socio-economic status as the grouping variable.

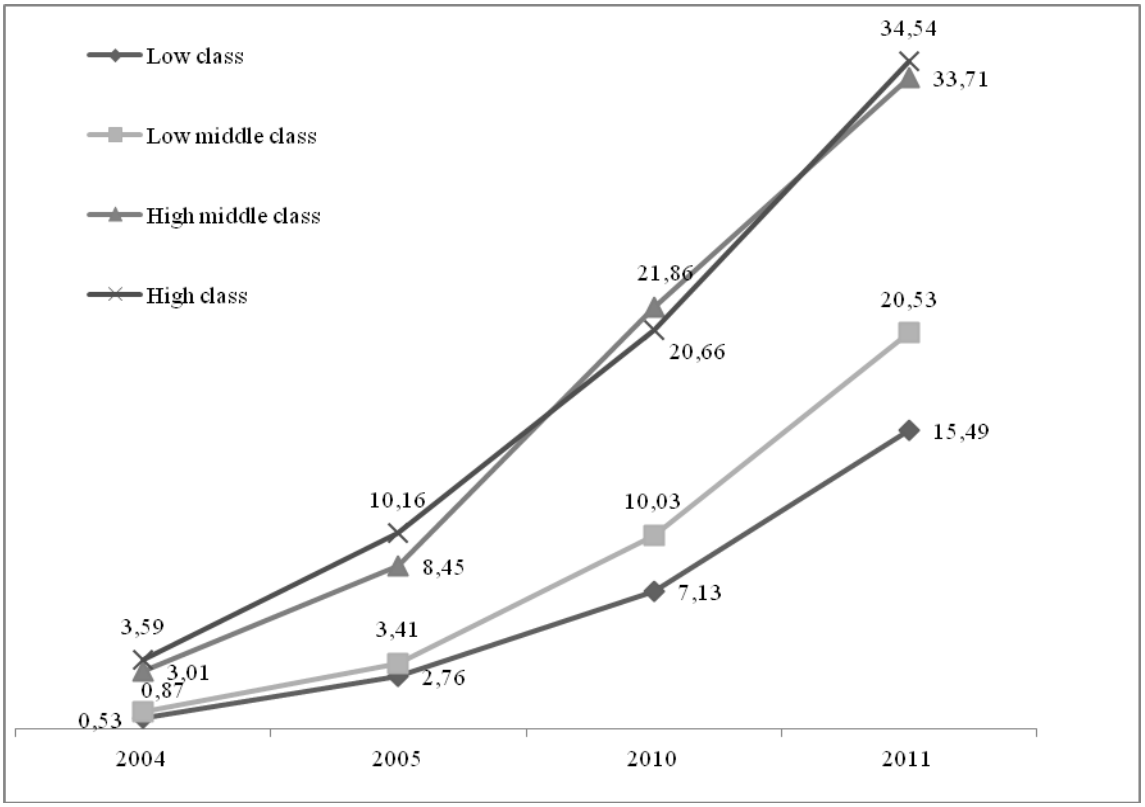

Chart 7: E-shopping penetration in Spain by social class (2004/2005-2010/2011). Source: INE

In this case, no direct effects of the economic crisis on the evolution of e-shopping penetration in the different social classes were observed. In the 4 categories, over these years, there has been an increase of the percentage of Internet users that buy products through the Internet. However, also in this case, there is a very significant difference between the low and high social classes. The latter show a growth rate of the percentage of e-shoppers from 2004 to 2011, of approximately 30%. However, low middle class Internet users who purchase products or services online increased by 20%. This circumstance occurs despite the fact that in 2004 the percentages were very close to 0%,

very similar to low class Internet users. Lastly, as regards the latter, the growth rate of the e-shoppers has been the lowest (barely 15%).

Path-Analysis: the evolution of trends

To study the evolution of the influence of the age and social class variables on e-shopping, we have analyzed, firstly, four path-analysis models. These models compare patterns of influence over the 4 years selected. As shown in figure 1 and in table 1, there is an increase in the predictive capacity of social class (status) on the dependent variable "e-shopping" (2004 = 0.156 ; 2011 = 0.244) as well as an opposite pattern of age on the same dependent variable (2004 = -0.092 ; 2011= -0.212).

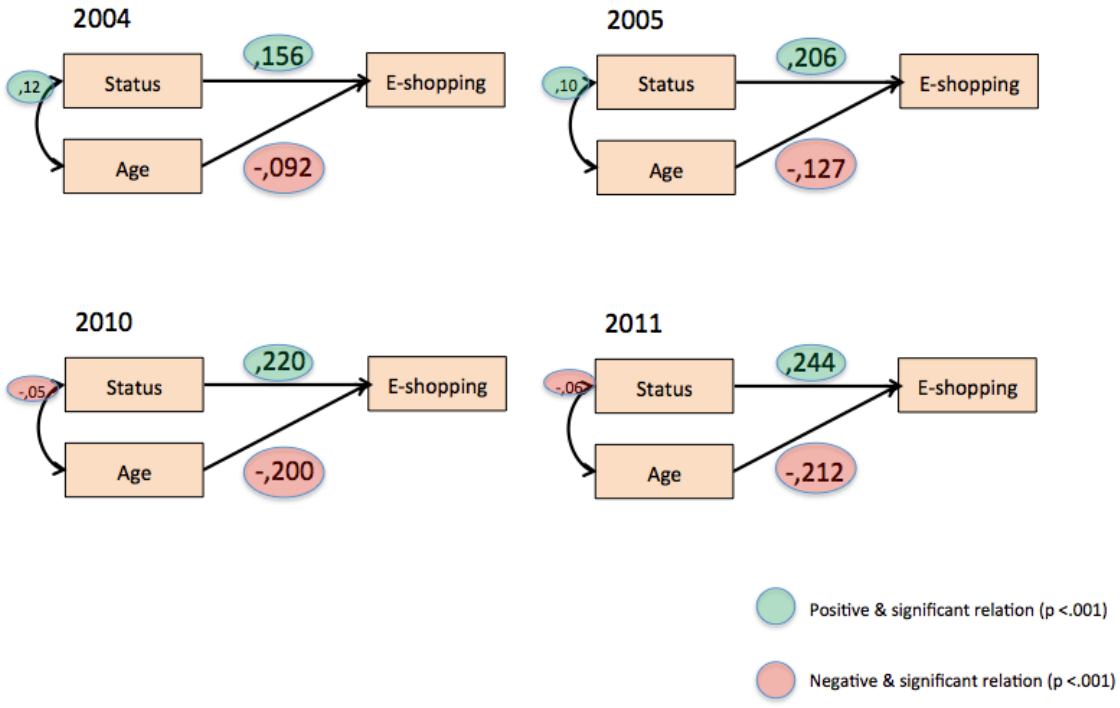

Figure 1: representation of standardized weights, broken down by year

	Estimated relations		Estim.	Stand.	S.E.	C.R.	P
2004	E-Shopping	<--- Status	.009	.156	.000	18,837	***
	E-Shopping	<--- Age	-.002	-.092	.000	-11.146	***
2005	E-Shopping	<--- Status	.016	.206	.001	27,329	***
	E-Shopping	<--- Age	-.005	-.127	.000	-16.830	***
2010	E-Shopping	<--- Status	.026	.220	.001	29,435	***
	E-Shopping	<--- Age	-.002	-.200	.000	-26,875	***
2011	E-Shopping	<--- Status	.025	.244	.001	32,409	***
	E-Shopping	<--- Age	-.014	-.212	.000	-28.219	***

Table 1: standardized weights broken down by year.

Secondly, to analyze whether the increase of the predictive relationship of the independent variables on the dependent variable is significant, we have carried out two analyses to compare the models. In the first one, we implemented a multigroup analysis (segmented by years 2004, 2005, 2010 and 2011) with two models (the first without restrictions and the second, establishing the relationship between status and e-shopping the same for all years). The results allow us to state that the model with the same relationship for all years has a significantly worse fit with the model where the same parameter is estimated freely ($\chi 2$ = 79617,77, p <.001). This model also offers a satisfactory fit index (AGFI =0.936, RMSEA =0.063, SRMR = 0.044) which allows us to state that in the different groups, the relationship between status and e-shopping changes significantly in the direction previously indicated.

In the second model we have repeated the same procedure, carrying out a second multigroup analysis (segmented by years 2004, 2005, 2010 and 2011) with two models (the first without restrictions, and the second establishing the age-e-shopping relationship the same for all years). As with the previous analysis, the results allow us to state that the model of equal relationship for all years has a significantly worse fit than the model where the same parameter is estimated freely ($\chi 2$ = 47674,521 p <.001). The mode offers a satisfactory fit index (AGFI =0.956, RMSEA =0.053, SRMR = 0.043) which, again, allows us to verify that in the different groups the relationship between age and e-shopping changes significantly.

DISCUSSION:

The ANOVA analyses show several particularly important circumstances for the goals of our paper. First, we find that both Internet usage and e-shopping penetration rates in Spain have risen significantly since 2004, with no reduction or slowing down of this upward trend during the years of economic crisis. Therefore, our data do not provide, in principle, evidence of a direct and measurable effect of the context of economic crisis on the use of resources by Spanish citizens to connect to the Internet and/or purchase goods and services online.

However, secondly, the ANOVA analysis by social class does provide us with substantive information to qualify the above result. We find a positive evolution of all social classes throughout the period observed. However, the middle classes (both the low middle and the high middle classes) are the population groups with the smallest increase in Internet penetration in Spain, both before and after the economic crisis. In the case of the low middle class, this percentage is practically nil during the years prior to the crisis. In the case of the middle-high class, Internet usage penetration drops during the years of the crisis.

In relation with the BAIU studied, e-shopping, we also observe a positive evolution process across all social classes. Despite this, the pattern of evolution of the middle classes seems to be subsumed by that of the closest social classes. Thus, the evolution of e-shopping in the low middle class is very similar to the low class. On its part, the behaviour of the high middle class according to this indicator is practically the same as that of the high class. There is therefore a process of polarization of the middle social classes.

The deeper analysis offered by the Path Analysis model allows us to specify the influences of the social class and age variables on the BAIU we have selected for this study, e-shopping. Now we know that the “social class” variable has a significant influence on the use of this economically advantageous service. The higher the social class a citizen belongs, to the higher the likelihood of them engaging in e-shopping. However, here we find a peculiar circumstance. This trend, far from reducing over time, tends to increase, thereby widening the divide existing in 2004.

E-shopping is one of the economic uses of the Internet the Spanish population resorts most. Almost 20% of Spaniards bought goods or services through the Internet in 2012. The advantages are many. It offers a scenario of greater competitiveness for

companies and, therefore, generates lower prices both for goods and services. It allows citizens to access better and more varied consumer offers. It renders more flexible and reduces many costs associated with consumption, such as time devoted to shopping and the need to go to the points of sale. Lastly, it makes it possible to access more and better information regarding product features and consumer experiences of previous clients or customers. It is therefore an economic resource that reduces costs, saves time and improves citizens' shopping possibilities.

According to our ANOVA analysis, during the years prior to the economic crisis, the four social classes observed showed polarization (the high middle and high classes on the one hand, and the low middle and low classes on the other) but with rates of adoption of this service that are not very different. However, during the years of onset and development of the crisis, the polarization increases. Citizens of the social classes with the least resources (mainly low class but also low middle class) have a far lower rate of incorporation of users to these services. Meanwhile, the high classes (especially the middle-high class) increased their percentage of users of this service significantly. Obviously we cannot attribute this result directly to the economic crisis. We do not know whether this pattern would have also held in a more stable economic scenario and we should remember that, at the starting point of our analysis, prior to the crisis, there already was significant inequality. However, it is relevant to point out that during the years analyzed, the distance between the richest and the poorest, which was already noticeable in the years prior to the crisis, has widened and deepened. This is consistent with the general indicators such as the GINI coefficient or the s20-s80 Index shown above.

In line with this interpretation of the growth of inequality are the data offered by the Path Analysis implemented for this study. As we have pointed out, social class helps us forecast the behaviour observed, namely e-shopping. The higher the social class of the citizen, the greater the likelihood of them using this service. Far from reducing, our analysis shows that this trend increases over the years. Again, this result supports the polarization thesis. Being part of the high class or middle-high class has a significant influence on the likelihood of taking advantage of what e-shopping offers. This trend has not ceased to increase since 2004, even though it would have been expected, in accordance with the normalization theses (Norris, 2001), that digital inequalities would reduce over time, with a narrowing of the distance between those with a greater and a lesser disposition to accept the use of new services. But, at the moment, this process of

convergence in the degree of use has not occurred and, what is more, it is worth noting that the economic crisis and the process of deepening of social inequalities are synchronous.

In brief, replying to the main question of our research, as formulated at the start of this paper, we are in a position to state that during the economic crisis digital differences between those citizens of social classes with the most resources and those with the least either remain flat or grow. This could make us think that the economic crisis has not only generated greater inequality in the digital field, but that it could be preventing or slowing down the reduction and therefore, the adequate development of the Information and Knowledge Society in Spain. Thus, one of the greatest risks associated with the process described in this paper is that digital inequalities are affecting the middle classes and, thereby, reinforcing and strengthening traditional class inequalities.

BIBLIOGRAPHY:

Attewell, Paul. "The First and the Second Digital Divides", *Sociology of Education* 2001, 74: 252-269

Bimber, Bruce. "Measuring the gender gap on the Internet", *Social Science Quarterly* 2000, 81: 868-876.

Bonfadelli, Heinz. "The Internet and knowledge gaps. A theoretical and empirical investigation", *European Journal of Communication* 2002, 17: 65–84.

Cooper, Joel. and Weaver, Kimberlee. 2003. *Gender and Computers: Understanding Digital divide*, Mahwah: Lawrence Erlbaum Associates.

DiMaggio, Paul., Hargittai, Eszter. "Form the Digital Divide to Digital Inequality. Studying Internet Use as Penetration Increase". (Working paper) *Centre for arts and Cultural Policy Studies.* 2001. 15: 1-23.

DiMaggio, Paul., Hargittai, Eszter., Neuman, W. Russel. and Robinson, John. P. "Social implications of the Internet", *Annual Review of Sociology* 2001, 27: 307–336.

DiMaggio, Paul., Hargittai, Eszter., Celeste, Coral. and Shafer, Stefen. 2004. "From unequal access to differentiated use: A literature review and agenda for research on digital inequality." in Social Inequality, edited by Kathryn M. Neckerman. Russell Sage Foundation.

Gunkel, David .J. "Second thoughts: toward a critique of the digital divide", *New Media & Society*, 2003, 5:499–522.

Hargittai, E. (2010). "Digital Na(t)ives? Variation in Internet Skills and Uses among Members of the 'Net Generation'", *Sociological Inquiry* 80(1): 92-113.

Horrman, D.L, and T.P. Novak. "Bridging the Racial Divide on the Internet". *Science*, 1998, 17: 145-164.

Hoffman, Donna., Novak, Thomas. P. and Scholosser, Ann. E. "The evolution of Digital divide: examining de relationship of race to Internet access and usage over time", in Benjamin. M. Compaine (ed.), *The digital divide. Facing a crisis or creating a myth?*, 2001, Cambridge (Mass): The MIT Press, pp. 47-99.

Norris, Pippa. 2001. *Digital Divide? Civic Engagement, Information Poverty and the Internet Worldwide*, Cambridge: Cambridge University Press.

NTIA (National Telecommunications and Information Administration) 1999. *Falling Through the Net II: defining Digital Divide.*

NTIA (National Telecommunications and Information Administration) 2000. *Falling Through the Net II: toward digital inclusion.*

NTIA (National Telecommunications and Information Administration) 2002. *A Nation online: How Americans are expanding their use of the Internet.*

Robles, José Manuel., Torres, Cristóbal., and Molina, Oscar. "Brecha digital. Un Análisis de las Desigualdades Tecnológicas en España". *Sistema.* 2010, 218: 3-22.

Rockwell, S and Singlenton, L. "The effects of computer anxiety and communication apprehension on the adoption and utilization of the Internet". *Journal of Communication.* 2002, 12 (1): 123-145.

Rojas, V, Straubhaar, J., Roychowdhury, D., and Okur, o. 2004. "Communities, Cultural Capital and the Digital Divide. In Bucy, e. Newhagen, J. (Eds), *Media Access: Social and Psychological Dimensions of New Technology Use*. London: Lea. pp: 107-130.

Strover, S. 1999. *Rural Internet Connectivity*. Columbia, MO: Rural Policy Research Institute.

Torres, Cristóbal., Robles, José Manuel and Molina, Oscar. "¿Por qué usamos las Tecnologías de la Información y las Comunicaciones? Un estudio sobre las bases sociales de la Utilidad Individual de Internet". *Revista Internacional de Sociología.* 2011, 69 (2): 371-392.

Van Deursen, Alexander. J.A.M. y Van Dijk, Jan. A.G.M. "Improving digital skills for the use of online public information and services", *Government Information Quarterly,* 2009, 26(2):333-340.

Van Deursen, A. J. and van Dijk, J. "Internet Skills and the Digital Divide.", *New Media & Society*, 2010, 12(8): 1-19.

Van Dijk, Jan. A.G.M. 2005: *The deepening divide. Inequality in the Information Society*, 2005, California: Sage Publications.

Van Dijk, Jan. A.G.M.. “Digital Divide research, Achievements and Shortcomings”. *Poetics*, 2006, 34: 221–235.

Walsh, Ekaterina. 2000. *The Truth about the Digital Divide*. Cambridge: Forrester.