MASTERS IN MANAGEMENT (MIM)

MASTERS FINAL WORK

DISSERTATION

FINANCIAL LITERACY AND POLITICAL IDEOLOGY

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MARCH – 2022

ABSTRACT, KEYWORDS AND JEL CODES

As the conflict in politics becomes increasingly polarized, researchers in political science and psychology have become increasingly interested in determining the antecedents of individuals' attachment to ideologies. While some recent developments illustrate the relationship between political orientation and socio-demographic factors, personality traits, locus of control or risk aversion, this dissertation provides new insights for a possible relationship to financial literacy.

A unidimensional model provides a simple understanding of the structure of political ideology; however, it has been shown to be implausible and insufficient. In this research, we highlight a model based on two dimensions: one for the economic freedom, and another for personal freedom. We construct a framework with data retrieved from a questionnaire connecting individual's political orientation in the two-dimensional spectrum and its determinants with the use of *ordered probit models*.

The results suggest an interplay between financial literacy and political orientation in the *Left-Right* dimension, in which being financially-literate increases the probability of an individual having *Centre* or *Right*-wing political views, in detriment of *Left*-wing views. We found no significance when considering the *Libertarian-Authoritarian* dimension.

Furthermore, we analyse the effect of the highest level of education as an alternative measure of financial literacy and the results suggest that they capture different features and should, therefore, be interpreted as distinct variables. Several other variables included in the model were only proved significant in one of the dimensions. Our conclusions suggest that variables with economic links affect the dimension that refers to economic freedom such as financial literacy and average monthly income and, on the other hand, other variables such as region, age, ethnicity, or religion provide a better explanation of political orientation on a personal freedom dimension.

KEYWORDS: financial literacy, political orientation, political ideology, political spectrum, political determinants

JEL CODES: A2, D14, D72, G53 P16, P26

ACKNOWLEDGMENTS

This dissertation marks an important end of a very important journey in my life. This was only made possible by the unconditional support of several people surrounding me, and I would like to take this moment to thank them.

First, I would like to thank my dissertation supervisors, professors Esmeralda Ramalho and Joana Pais, for all the guidance provided, for always indicating the best path to follow and clarifying me when crucial doubts arise, thus allowing me to progress with the dissertation. I would also like to thank all those involved in my journey at ISEG – Lisbon School of Economics and Management, colleagues and professors, for all the transmitted knowledge and experience.

Secondly, I want to thank my family to whom I owe everything that I am today. To my mother for all the support and unconditional love she shows me every day, for always supporting and believing in me even when I doubt myself and for never letting me give up on my dreams. To my father for all the example of work ethic, discipline, and education transmitted to me my whole life which translated to a big part of how I face life today. And finally, to my brother, who was always in my corner. For being my biggest example and my biggest fan, for all the support and guidance throughout all my life, and for being my rock.

Thirdly, I want to thank my closest friends without whom I could never live without. For their spirits and the way they face life, for all the support they give me every day without even knowing it, and for being my haven in moments of stress. For providing me the best memories and for the assurance of knowing that they will always be there for me, regardless of the distance that may separate us.

And finally, to my Tiago, for putting up with me in my worst moments, for all the patience shown along this journey and for all the affection, cherish, and love given every day. Thank you for making me a better person and for making me the lucky one who has you by my side.

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1. INTRODUCTION

The second half of the 20th century was characterized by strong growth in the Portuguese economy, driven by joining the European Free Trade Association EFTA in 1960 and entering the European Economic Community EEC in 1986. In contrast, over the last 20 years (2000-2020) Portugal saw its economic indicators deteriorate. Since 2004, Portugal's per capita income in Purchasing Power Standards (PPS) increased by only 5.1%, while the average of the European Union countries grew by 20.5% (constant 2017 international $)[1]. This growth level differs significantly from other catching-up economies and Portugal is therefore in the 20th place in this indicator in 2020 with about 77% of the EU average, being surpassed by six economies in the same period. Indeed, the average per capita income in PPS for the 10 countries that joined the EU in 2004 is already at the same level as Portugal, overcoming a gap of about 17 percentage points.[2]

In the latest European Central Bank ECB report published in August 2021, based on research by Klapper and Lusardi (2019), Germany and the Netherlands lead the ranking for "Financial literacy of the general public by euro area Member State" with 68% and 66%, respectively. Portugal, with only 26%, appears in the last position.

Could there be any association between a country's level of financial literacy and the choice of its policy makers? Or even with the lack of participation in the electoral process when the abstention levels registered in Portugal have been systematically increasing? Is the economic situation in Portugal related to the lack of financial knowledge of its population? Our research seeks to contribute to a gap in the literature that relates financial literacy with basic economic political beliefs, a link yet to be established.

[1] International Comparison Program, World Bank | World Development Indicators database, *Eurostat-OECD PPP Programme*. Obtained on 15 January 2021, retrieved from: https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.KD?end=2004&start=2004&view=bar

[2] European Commission, *Country Report Portugal 2020*. Obtained on January 15 2021, retrieved from: https://ec.europa.eu/info/sites/default/files/2020-european_semester_country-report-portugal_en.pdf

The *Left-Right*, or *Liberal-Conservative*, continuum is commonly regarded as a key value orientation in most, if not all, Western democracies (Curtice and Bryson, 2012). Available literature is typically based in a unidimensional understanding of political ideology as a starting point (Feldman and Johnston, 2014). However, numerous articles suggest that a single continuum is insufficient to represent the nature of political ideology in the general population despite its appeal and simplicity (Feldman and Johnston, 2014). From an empirical perspective, research in both political science and psychology suggests that citizen attitudes across ideological domains, while often correlated, remain statistically independent (Feldman and Johnston, 2014).

A large strand of literature focuses on individual determinants of political orientation mainly focused on the relationship between variables such as income, gender, or education (e.g. Teerakapibal, 2017) while a different strand of literature focuses on the economic determinants of electoral outcomes and voting behaviour (e.g. Toinet, 1984; Bartkowska and Tiemann, 2011; Lewis-Beck and Stegmaier, 2000). Economic factors are regarded as some of the most relevant factors influencing voting behaviour (Bartkowska and Tiemann G., 2011), as economic beliefs and knowledge influence party preferences and political orientation (Colander, 2005; Klein and Stern, 2005). Plutzer (2002), for example, has a 32-variable model, although it can only account for 31% of the variation in political engagement.

The possible relationship between political orientation and financial knowledge is yet to be established, since very little research has been made on this particular topic. Our study aims at connecting these separated strands of literature: our intuition suggests that financial knowledge could shape individual political orientation beyond a *Left-Right* unidimensional scale. The results suggest an interplay between political orientation and financial literacy in the *Left-Right* dimension, as being financially-literate increases the probability of an individual having *Centre* or *Right*-wing political views, in detriment of *Left*-wing views. We found no significance when considering the *Libertarian-Authoritarian* dimension.

Being aware of the relevance of this theme in the political and economic world, this study aims to contribute to a better understanding of the role of financial education in the evolution of political ideas and consequently, of the functioning of the modern world. The

findings will be useful not only for public decision-makers, politicians, teachers, and political enthusiasts, but also for all researchers, who may include our results in their studies.

This study initially provides a literature review where all the mentioned topics are covered in order to provide a relevant background for the present research. It is then followed by the hypothesis that laid the foundation for this research, as well as the explanation of the adopted methodology for the construction of the theoretical model and all the collected data used in the process. In the following section, the reader can find the empirical analysis and discussion of the obtained results. We end our contribution by recognizing and explaining our limitations and presenting proposals for further and improved research.

2. LITERATURE REVIEW

2.1. POLITICAL SPECTRUM

The history of political thought can be traced back to early antiquity, with seminal works such as Plato's Republic and Aristotle's Politics in the West, while works such as Confucius's political manuscripts, Chanakya's Arthashastra and *Chanakya Niti* contributed to the political foundations in the East (Kabashima and White III, 2014).

A one-dimensional concept labelled "*Left*" and "*Right*" at its end points has divided the European political sphere (Weber, 2013). Nowadays, the terms "*Left* wing" and "*Right* wing" are used as symbolic labels for *liberals* and *conservatives*, although the terms originated in reference to the physical seating arrangements of politicians from the French *Assemblée* in 1789 when members of the French National Assembly convened to begin drafting a constitution. The first attempts to quantify political conviction, however, date back to the 1940s, when Ferguson (1941) and Eysenck (1944) created models for a factor analysis of political principles.

A unidimensional model of political ideology provides a simple understanding of the structure of political ideology. While there may be some advantage in mapping political attitudes onto a simple dimension of political competition, particularly in a two-party political system, there is considerable evidence that this does not do justice to the ways in which people actually organize their political beliefs and has been shown to be implausible in numerous studies (e.g. Luttbeg and Gant, 1985; Heath, 1986; Fleishman 1988).

A number of multi-axis models of political thought exist, most famously the Nolan Chart, developed by the American *libertarian* David Nolan in 1969, representing political views along two axes, representing economic freedom and personal freedom. It expands beyond the standard one-dimensional, *Left-Right* or *Progressive-Conservative* division to include *libertarianism* outside of the spectrum.

Similarly, Evans *et al.* (1996) suggests that the public's core political values form two dimensions: one has been termed the socialist *versus* "*laissez-faire*" - or *Left-Right* - dimension and the other, the *Libertarian versus Authoritarian* dimension. The former can be interpreted as concerned with equality and the latter with personal freedom (Rokeach, 1973).

Greenberg and Jonas (2003) laid the foundation of the political compass by shifting back its interpretation to the traditional *Left-Right* axis and a vertical axis representing ideological rigidity, the political compass constitutes a reconstructed version of the Nolan Chart:

• From an economic point of view, the *Left-Right* axis measures one's opinion of how the economy should be run: "*Right*" is defined as the desire for the economy to be left to the devices of competing individuals and organizations whereas "*Left*" refers to a desire for the economy to be run by a cooperative collective agency (which can mean the state but can also mean a network of communes).

• The *Libertarian-Authoritarian* axis measures one's political opinions in a social sense, in terms of the amount of personal freedom that one would allow: "*Libertarianism*" is defined as the belief that individual freedom should be maximized (people should be free to choose the moral code that they follow and the social mores that they respect, and are comfortable living in a diverse, multi-ethnic, multi-linguistic society), while "*Authoritarianism*" prizes order and tradition and is defined as the belief that authority should be obeyed, it is inclined to the view that society needs to encourage and enforce common moral codes, social mores and linguistic practices as a way of promoting social cohesion, while they are personally more comfortable living in a relatively homogenous society. These values constitute a significant and meaningful element of the public's political beliefs as previous exploratory analyses have suggested.

The underlying importance of separating these two dimensions of ideology comes from the fact that those high on *authoritarianism* are very likely to be socially *conservative*,

although on economic policy they are just as likely to be *liberal* as to be *conservative* (Feldman and Johnston, 2014).

2.2. POLITICAL ORIENTATION DETERMINANTS

2.2.1. FINANCIAL LITERACY

Financial literacy is defined by the OECD as "*a combination of awareness, knowledge, skill, attitude and behaviour necessary to make sound financial decisions and ultimately achieve individual financial well-being*". Lusardi (2008) defines financial literacy as the "*knowledge of basic financial concepts, such as the working of interest compounding, the difference between nominal and real values, and the basics of risk diversification*" but the conceptual definition of financial literacy is controversial, since scholars and financial experts have long disagreed on how to define this concept (Kimiyaghalam, 2015).

Age, level of education, gender, major of study, occupation, area of living, race, wealth, and ethnical heritage all play a role in determining financial literacy, according to a number of studies. (e.g. Ansong and Gyensare, 2012; Agarwal *et al.*, 2009; Guiso and Jappelli, 2008; Goldsmith and Goldsmith, 1997b; Murphy, 2005; Cole *et al.*, 2008)

Lack of financial literacy has been cited by numerous studies as a major reason for costly borrowing and high debt (Lusardi and Tufano, 2009), low participation in the formal financial market and stock market (Cole *et al.,* 2008), or poor and inadequate planning for retirement (Lusardi and Mitchell, 2006). For instance, Ricaldi *et al.* (2013) showed how financial literacy deficiencies can explain naïve consumer choice among credit card users.

Focusing on the subject of financial stability, financially-literate individuals may be more concerned about financial stability in order to safeguard the performance of their assets and to mitigate the risks associated with investment (Montagnoli *et al.,* 2016). A financially-literate community can better assess financial policies of their respective governments and actions of the financial system (Lusardi, 2009). There is evidence that, after a financial crisis, political polarization is higher (Mian *et al.,* 2014) and the aftermath is characterized by an increase in support for the far-*right* parties (Funke *et al.* 2015).

A dated empirical literature studies the potential effect of economics education on individuals' political attitudes, with most of these studies concurring that even a single economics course influences political ideology toward increased *conservatism*. For

example, Colander (2005) shows that individuals with graduate training in economics tend to have more *conservative* beliefs. Similarly, Fischer *et al.* (2017) find that individuals who have studied economics tend to have "*an unambiguous pro-market influence on political attitudes*", a characteristic associated with *right*-wing beliefs. However, this strand of literature has not reached any universally accepted conclusion. Delis *et al.* (2019) found no evidence that a major in business or economics causally affects individuals' political ideology. On the other hand, graduate economics training is distinct from financial literacy, as the latter is related to the basic understanding of the fundamental notions of finance (Montagnoli *et al.*, 2016).

Studies looking at how financial literacy affects policy and political preferences are limited. Magistro (2019), by using *multinomial logit models* with data from the UK and Italy, found that economic literacy does affect economic policy preferences: financially-literate individuals, regardless of their economic condition and self-interest, are more likely to be in favour of economic openness (immigration, free trade, remaining in the EU). She argues that individuals who are financially-literate are expected to weight the short run and long run costs and benefits of an economic policy with more precision and less bias and as a result, they are more likely to accurately estimate what effect that policy is going to have on their expected utility than a financially-illiterate individual. Similarly, Bucher-Koenen and Lusardi (2011) used political attitudes at the regional level in Germany as an instrument, arguing that free-market oriented supporters are more likely to be financially-literate.

The literature investigating the relationship between financial literacy and political ideology is even more in its early stages. A large body of literature claims that *right*-wing/*conservative* people show a negative association with intellectual capacity as well as lower scores in numeracy assignments (e.g. Choma *et al.*, 2019; Onraet *et al.*, 2015). A study by Arrondel *et al.* (2014) also shows some differences in financial literacy across political affiliation: finding that centrist voters perform better than others on financial literacy measures.

Montagnoli *et al.* (2016), argues that financially-literate individuals are more likely to lean at the *Centre-Left* or the *Centre-Right* and, on the other hand, less likely not to know their political orientation. Furthermore, financially-literate individuals are also more likely to have a stable political orientation over time and less likely to radically shift voting

patterns. This can be interpreted as indicative that greater financial literacy is associated to a more stable, moderate political orientation.

There is very little research relating financial literacy to a *Libertarian-Authoritarian* spectrum. Metaanalytic results indicate that cognitive ability is negatively related to social *conservatism* or *authoritarianism* (Onraet *et al.,* 2015; van Hiel *et al.,* 2010). Cantoni *et al.* (2016) find that fundamental economic preferences have the greatest power in explaining variation in anti-*authoritarian* ideology, suggesting that studying these preferences is an important next step for understanding political ideology and behaviour.

2.2.2. SOCIO-DEMOGRAPHIC VARIABLES

A vast majority of the literature on political and party preferences has focused on the relationship between personal characteristics such as gender, income and education with political orientation and party preferences. Much of the political science research on the determinants of political orientation is based on the assumption that social norms, acquired from parents and family, are primarily influenced by the environment and cultural context.

Surat Teerakapibal's research (2017) suggests that males are more likely to possess a *conservative* view, while individuals with lower income tend to be *liberals* and the aging population is associated with *conservativeness*. Moreover, the country of residence plays a vital role in determining one's political attitude and there is an evident positive relationship between *liberalism* and education level. Rockey (2014) presents evidence suggesting that individuals who are more educated are more likely to take centrist positions.

Individual income has been linked to the likelihood of having stronger *right*-wing beliefs, according to social science research in the United States and the United Kingdom (e.g., Gelman *et al.*, 2007; Evans and Tilley, 2012). Powdthavee and Oswald (2014) compare individuals before and after an exogenous shock to income and wealth, finding that winners tend to move to the *right* of the unidimensional political spectrum.

A large variety of studies model turnout and political participation. McLeod *et al.* (1999), for example, investigate the role of social variables such as community integration, mass, and interpersonal communication in predicting two forms of local political engagement. The importance of social capital and social networks for political engagement is also emphasized by Lake and Huckfeldt (1998).

Current literature strongly suggests an interplay between both socialization factors and situational factors, such as life-threatening events, and a significant influence on attitudes and behaviours in regard to *authoritarianism* (Sibley and Duckitt, 2008).

2.2.3. PERSONALITY TRAITS

"*Political orientation does not seem to be the automatic result of parental socialization and socio-demographic circumstances*" as summarized by Hibbing *et al.* (2014, p. 298).

A growing body of evidence suggests that basic individual characteristics, such as personality traits, are linked to political ideology and behaviour (e.g., Mondak and Halperin, 2008; Vecchione and Caprara, 2009; Gerber *et al.*, 2010; Mondak *et al.*, 2010; Morton *et al.*, 2011).

Recent political psychology research has attempted to explain differences in political orientations using the well-established big five personality factors (extraversion, agreeableness, openness, conscientiousness, and neuroticism). The underlying idea behind the existing literature is that *leftists* and *rightists* supporters tend to occupy different individual and social environments.

Mondak *et al.* (2010) presents a paradigm for predicting political engagement based on individual personality characteristics. The authors emphasize the idea that external variables influence an individual's political participation, but these environmental elements are highly linked to and influenced by personality traits.

There is evidence of a connection between personality factors and political ideology provided by Gerber *et al.* (2010). Agreeableness and neuroticism tend to lean individuals *left* on economic, but *right* on social matters. Conscientiousness is associated to *right*-leaning on economic and social issues whereas openness, on the other hand, would have the opposite effect on both matters. These findings confirm the hypothesis that overall conscientiousness explains *conservatism*, whereas openness is linked to *liberal* ideas. Extroversion is expected to have little effect.

Studying the relationship between personality and political ideology, however, can be fraught with problems. Most studies conceive the concept of ideology in a one-dimensional way, neglecting the well-founded belief that it has at least two separate dimensions. Lower levels of openness have been connected to *authoritarianism* (Akrami and Ekehammar,

2006; Stenner, 2009; Perry and Sibley, 2012; Hotchin and West, 2018), as have higher levels of conscientiousness (Sibley and Duckitt, 2008; Dallago and Roccato, 2010; Nicol and De France, 2016).

There is also vast research linking genetic predisposition to political inclinations, suggesting that political attitudes have a counterpart in the structure and function of the brain. For instance, Kanai *et al.,* (2011) link greater *liberalism* with increased gray matter volume in the anterior cingulate cortex, whereas greater *conservatism* with increased volume of the right amygdala. This suggests that decisions may be conditioned by differences, both functionally and anatomically, in brain structures, raising the possibility of biologically pre-determined political preferences, independent of free individual thought and judgement. It is still unclear whether a pre-existing, genetically rooted, personality trait, enhances or impedes *authoritarian* attitudes (Schnelle *et al.*, 2021).

2.2.4. RISK AVERSION

The use of simple lotteries, according to Kachelmeier and Shehata (1992), is one of the finest techniques to infer risk profiles: risk-lovers or risk-averse. The authors state in their article that when the premium (or payoff) increases, there is a considerable increase in risk aversion (or a decrease in risk seeking behaviour).

Risk aversion has been linked to *Left-Right* ideology in several studies. For example, Mair (1990) finds that *leftist* voters are more likely to reward splits than *rightist* ones, as *left*-leaning ideology is positively correlated with risk propensity.

On the same line of thought, many studies refer to a significant relationship between political ideology and risk aversion: Politically *conservative* individuals are largely thought to be more threat-sensitive and risk-averse than *liberal* individuals (Altemeyer, 1996; Duckitt, 2001; Farmer *et al.,* 2021). Dimick and Stegmueller (2015) claim that the magnitude of the effect of risk aversion is approximately as strong as a person's income on political ideology.

There are very little to no references linking risk aversion and an *authoritarian* or *libertarian* ideology.

2.2.5. LOCUS OF CONTROL

Locus of control is a generalized measure of expectations for internal versus external controls. People with an internal locus believe that their own actions determine the consequences they get while those with an external locus believe that their behaviour is uncorrelated with the outcomes and that the rewards in life are generally beyond their control (Rotter, 1966).

It is one of the most analysed characteristics in the field of personality analysis (Rotter, 1990). Since the 1960s, hundreds of studies on the locus of control have been published, and this concept has invariably been applied to various interpersonal and intraphysical phenomena (Leone and Burns, 2000).

The locus of control concept may be very useful in understanding how individual personality variables contribute to political behaviour (Deutchman, 1985). Fink and Hjelle (1973) suggest that external items are more likely to be politically compatible with *liberal* ideology because they suggest that "*environmental conditions determine behaviour*". On the same line of thought, internal items are seen as more compatible with *conservatism* because they emphasize "*individual responsibility, self-initiative, success through hard work and discipline - a constellation of attitudes consistent with the Protestant work ethic and the ideological belief that each person shapes his own destiny*".

Yet again, the literature relating locus of control to a second political dimension is scarce. Nevertheless, it is logical that someone who believes to have a great deal of influence over events in their life would place greater value on political participation, believing in its impact in the world. Thus, someone with an internal locus of control ought to reasonably prefer more democratic governance, while someone with an external locus of control might reasonably prefer more *authoritarian* governance (Ashley, 2018). On a context of risk-taking situations, Baron and Arenson (1967) found that *authoritarianism* and external control of reinforcement appear to have a positive relationship.

There is some disagreement in this evidence as, contrary to predictions, McCollaum and Lester (1995) showed that an anti-*authoritarian* orientation was associated with an external locus of control.

2.3. SYNTHESIS

Due to the impact that politics have on society, the quantification of political ideologies has been proven to be quite relevant. Over time, models to quantify political orientation have undergone changes, as a result of being analysed by several researchers and looked at from different perspectives, and the usual one-dimensional *Left-Right* model has proven not to be a fair way of defining the ideals of each one. In this research, the model which the analysis is based on two dimensions is highlighted: one for the economic freedom, and another for personal freedom. To model political orientation, several factors such as sociodemographic variables, personality traits, risk aversion, locus of control were explored.

With respect to this literature, our main contribution is to develop a clear theoretical framework linking basic individual characteristics, with special focus on financial literacy, to political ideology in a two-dimensional spectrum.

3. HYPOTHESIS AND METHODOLOGY

3.1. HYPOTHESIS

The hypotheses below arise from the main objective of this research: Testing whether financial literacy influences an individual's political orientation.

Hypothesis 1: An individual's political orientation within the *Left-Right* dimension is affected by his or her level of financial literacy.

Hypothesis 2: An individual's political orientation within the *Libertarian-Authoritarian* dimension is affected by his or her level of financial literacy.

Hypothesis 3: Some variables influencing an individual's political orientation within the *Left-Right* dimension do not influence an individual's political orientation within the *Libertarian-Authoritarian* dimension and vice-versa.

The third hypothesis is motivated by our intuition that, by separating clearly distinct dimensions, some factors may lose significance. In other words, we believe that some variables previously used to explain political ideology on a single dimension do not affect both dimensions and should, therefore, be analysed separately. Our belief is that variables with economic links such as average monthly income may affect the dimension that refers to economic freedom. In contrast, other variables such as region, age, ethnicity, or religion may explain political orientation on a personal freedom dimension better.

3.2. METHODOLOGY

As it will be explained further in section *4.1. Survey Description*, our dependent variables take on discrete values originated from *likert* scale responses, which are governed by a logical ordering in the categories (ranging from *Right* to *Left* and from *Libertarian* to *Authoritarian*). Since these variables have five potential categories, we model political orientation by estimating *ordered probit* regressions of political orientation. In fact, the *ordered probit model* serves as an appropriate framework for statistical analysis whenever survey responses are discrete and reflect an ordering mechanism (Daykin and Moffatt, 2002).

The ordinal regression model is commonly presented as a latent variable model. Consider the latent dependent variable y_i^*. Thus, according to Verbeek (2004), p. 203, the *ordered probit model* can be expressed as:

$$y_i^* = x_i' \beta + \varepsilon_i \ , \ \varepsilon_i \sim N(0,1) \tag{1}$$

$$y_i = j \quad \text{if} \quad \gamma_{j-1} < y_i^* \leq \gamma_j \tag{2}$$

where $\gamma_0 = -\infty$, $\gamma_{j-1} \leq \gamma_j$, and $\gamma_m = \infty$ for unknown γ_js. y represents the political orientation variables, j is the categorical option for political orientation in each dimension, i is the observation, and ε is a random error. The vector x_i is a set of K covariates that are assumed to be strictly independent of ε_i. β is a vector of K parameters that is the object of estimation and inference.

To model the outcomes in both models, y_i = 1 (*Right*), y_i = 2 (C*entre-Right*), y_i = 3 (*Centre*), y_i = 4 (*Centre-Left*) and y_i = 5 (*Left*) on the first panel and y_i = 1 (*Libertarian*), y_i = 2 (*Centre-Libertarian*), y_i = 3 (*Centre*), y_i = 4 (*Centre-Authoritarian*) and y_i = 5 (*Authoritarian*) on the second panel, we can write an ordered response model as:

$$y_i = \begin{cases} 1 & if \quad y_i^* \leq \gamma_{1,} \\ j & if \quad \gamma_{j-1} < y_i^* \leq \gamma_j , \quad j = 2,3,4. \\ 5 & if \quad y_i^* > \gamma_{4,} \end{cases} \tag{3}$$

The parameters to be estimated are then β, γ_1, γ_2, γ_3 and γ_4 using the maximum likelihood method.

Because the predicted probability of falling in any of the categories of the political orientation is a non-linear function of the independent variables, computing predicted

probabilities requires setting every independent variable at some value. This is the probability of observation i selecting alternative j and can be expressed as:

$$P\ (y_i = j \mid x_i)$$

$$= \begin{cases} G\ (\gamma\ -\ x_i'\beta) & if \quad j = 1 \\ G\ (\gamma\ -\ x_i'\beta)\ -\ G\ (\gamma_{j-1}\ -\ x_i'\beta\ ) & if \quad j = 2,3,4 \\ 1\ -\ G\ (\gamma_4\ -\ x_i'\beta) & if \quad j = 5 \end{cases} \tag{4}$$

Where $G\ (.)$ is the standard normal distribution.

The objective of this dissertation is to study how the independent variables, with special focus on financial literacy, influence political orientation. In other words, the goal is to study the causality of the various regressors in changing the probability of the individuals being placed in the various categories in both dimensions.

In order to do so, we can observe several metrics, the first one being the coefficient signals. Because the interpretation of the coefficients is in terms of the underlying latent variable model, the sign of β_j gives information about the direction of $\Delta Pr(y = 5|x)$ and the symmetric of the direction of $\Delta Pr(y = 1|x)$, but not about the direction of the changes in the remaining probabilities.

A second analysis can be brought by observing the partial effects. These estimates measure the change in the probability of choosing a category within the five possible categories associated with a one unit increase in the regressor in question and are computed as the derivative of the political orientation variables with respect to the regressor of interest, *ceteris paribus*.

The partial effects for these variables are given by the function (5), where each x affects the M probabilities.

$$\Delta x_j\ =\ 1\ \Longrightarrow \Delta Pr\ (y\ =\ j|x)$$

$$= \begin{cases} \beta_j g(\gamma_1 - x_i'\beta) & if \quad j = 1 \\ \beta_j\left[g(\gamma_1 - x_i'\beta) - g\left(\gamma_{j-1} - x_i'\beta\right)\right] & if \quad j = 2,3,4 \\ \beta_j g(\gamma_5 - x_i'\beta) & if \quad j = 5 \end{cases} \tag{5}$$

Where $g\ (.)$ is the derivative of $G\ (.)$ with respect to the linear index.

In the case of dummy variables, partial effects result from the difference between the probabilities of choosing a category within the five possible categories evaluated at the value 1 and 0, *ceteris paribus*.

The reported marginal effects are *average marginal effects* (APE) as they are averaged over the entire distribution and not at the means of the independent variables. The use of coherent, real-world observations often makes the APE approach advantageous, and this approach has recently become the default setting in many statistical programs (Hodge, A., & Shankar, S. 2014), including *STATA*.

In terms of specification analysis, the RESET test was implemented, based on the addition of the second power of the estimated linear index. The Ramsey Regression Equation Specification Error Test (RESET) tests whether non-linear combinations of the fitted values help explain the response variable.

The analysis of individual significance is based on asymptotic *t* tests and to measure and express global and joint significance, inferences concerning model parameters and goodness of fit are based on Likelihood-ratio (LR) statistics. The LR test is performed by estimating two models and comparing the fit of one model to the fit of the other by comparing its log likelihoods. If this difference is statistically significant, then the less restrictive model (the one with more variables) is said to fit the data significantly better than the more restrictive model. The formula for the LR test statistic is:

$$LR = -2\,ln\left(\frac{LL\,(m_1)}{LL\,(m_2)}\right) = 2\left(LL\,(m_2) - LL\,(m_1)\right), \quad (6)$$

Where *LL* stands for log-likelihood function evaluated at the optimization point and m_1 and m_2 are the most and the less restrictive model, respectively.

4. DATA DESCRIPTION

4.1. SURVEY DESCRIPTION

For this study, we conducted a survey which includes questions on several metrics such as the dependent variable, political orientation in two dimensions, as well as the new key independent variable: financial literacy. Other included questions measure several of the independent variables previously considered in the literature such as age, gender, ethnic group, religion, education level, income, occupation, region, marital status, immigration

status, personality traits, risk aversion, and locus of control. The survey applied can be found in *Appendix 8.1 Survey.*

The survey was conducted in the *Qualtrics* platform and was subject to a pre-test with the purpose of validation, giving opportunity to identify flaws in the complexity, language, or relevance of the questions. As no errors were reported, the survey was launched targeting Portuguese individuals over 18 years old and was open to participation from 9pm on January 10th until 9pm on January 20th, 2022. The communication channels used for sharing the survey were mostly social networks (Facebook, LinkedIn, Instagram) and through direct contact with groups of friends and family.

The first set of questions measures our dependent variable: political orientation. This variable has two separate dimensions that will be analysed separately in two scales. This variable was measured by presenting the respondents with several statements about matters of both dimensions where respondents were asked to select an option within a *likert* scale of agreement (*Strongly agree, Somewhat agree, Neither Agree nor Disagree, Somewhat Disagree, Strongly Disagree*). These statements were adapted (wording and concept) from those suggested by Geoffrey Evans, Anthony Heath and Mansur Lalljee (1996) which are also included in the British Social Studies since 1986.

We first examined the *Left-Right* dimension. The responses to the following combined items form a scale in which a high score equals a *Left*-wing position:

- Government should redistribute income from the better off to those who are less well off.
- Big business benefits owners at the expense of workers.
- Ordinary working people do not get their fair share of the nation's wealth.
- There is one law for the rich and one for the poor.
- Management will always try to get the better of employees if it gets the chance.

The second dimension examined was the *Libertarian-Authoritarian*. The responses to the following combined items form a scale in which a high score equals an *Authoritarian*-wing position:

- Young people today don't have enough respect for traditional Portuguese values.
- Censorship of films and magazines is necessary to uphold moral standards.

- People who break the law should be given stiffer sentences.
- For some crimes, the death penalty is the most appropriate sentence.
- School should teach children to obey authority.
- The law should be obeyed, even if a particular law is wrong.

Both dimensions were divided into five categories, and each respondent fits into the one corresponding to the mean value of his or her answers.

Left-Right Scale:

- *Right* - when an individual's responses have mean values lower than or equal to 1.7.
- *Centre-Right* - when an individual's responses have mean values greater than 1.7 and lower or equal to 2.5.
- *Centre* - when an individual's responses have mean values greater than 2.5 and lower or equal to 3.4.
- *Centre-Left* - when an individual's responses have mean values greater than 3.4 and lower or equal to 4.2.
- *Left* - when an individual's responses have mean values higher than 4.2.

Libertarian-Authoritarian Scale:

- *Libertarian* - when an individual's responses have mean values lower than or equal to 1.7.
- *Centre-Libertarian* - when an individual's responses have mean values greater than 1.7 and lower or equal to 2.5.
- *Centre* - when an individual's responses have mean values greater than 2.5 and lower or equal to 3.4.
- *Centre-Authoritarian* - when an individual's responses have mean values greater than 3.4 and lower or equal to 4.2.
- *Authoritarian* - when an individual's responses have mean values higher than 4.2.

As for the second set, the variable tested was the key on which this research is based: financial literacy. Finding an easily measured financial literacy metrics is difficult, but Lusardi and Mitchell (2008, 2011) have designed a standard set of questions around three financial concepts and implemented them in numerous surveys in the United States and abroad: (i) numeracy and capacity to do calculations related to interest rates, such as

compound interest; (ii) understanding of inflation; and (iii) understanding of risk diversification. These are the basic skills required to make long-term decisions on the level of savings and investment.

The first question measures numeracy, or the capacity to do a simple calculation related to compounding of interest rates: "*Suppose you have 100€ in a savings account with an interest rate of 2% per year. If you never withdrew any money from this account, how much do you think there would be after 5 years?*". The respondents have five possible answers: "More than 102€"; "Exactly 102€"; "Less than 102€"; "Don't know"; "Prefer not to say".

The second question measures understanding of inflation, again in the context of a simple financial decision: "*Suppose inflation is 2% per year and you have put money into a savings account with an interest rate of 1% per year. Assuming that you buy the same things today and in one year's time, do you think you would be able to buy more with the money in this account in one year than today, less in one year than today, or do you think you would be able to buy exactly the same things in one year as today?*". The five possible answers are: "More than today"; "Exactly the same as today"; "Less than today"; "Don't know"; "Prefer not to say".

The third question is a joint test of knowledge about "stocks" and "stock mutual funds" and of risk diversification, since the answer to this question depends on knowing what a stock is and that a mutual fund is composed of many stocks: *"Which one of the following do you think is the riskier asset to invest in?"* Here the possible answers are "An individual share in a company", "A portfolio of different company shares"; "The risk is the same in both cases"; "Don't know"; "Prefer not to say".

The responses were combined to form a 4 point index for financial literacy, where "0" corresponds to none correct answers and "3" to all correct answers.

The third set of questions includes socio-demographic questions such as age, gender, ethnic group, religion, education level, income, occupation, region, marital status, and immigration status.

The fourth set of questions tests the Big Five personality traits: extraversion, agreeableness, openness, conscientiousness, and neuroticism. In order to do so, a 10-item version of the Big Five Inventory (BFI-44) developed by Rammstedt and John (2007) was used. Evidence shows that the BFI-10 is a psychometrically acceptable and practically

useful short measure of the Big Five factors of personality as it retains significant levels of reliability and validity. This question-form includes 10 short sentences where respondents were asked to select an option within a *likert* scale of agreement about themselves (*Strongly agree, Somewhat Agree, Neither Agree nor Disagree, Somewhat Disagree, Strongly Disagree*).

These five variables are scored individually to form an index ranging from 1 to 5. Extraversion: Mean of 1R and 6; Agreeableness: Mean of 2 and 7R; Conscientiousness: Mean of 3R and 8; Neuroticism: Mean of 4R and 9; Openness: Mean of 5R and 10 (R = means are reversed-scored).

The fifth set of questions refers to the locus of control. To test this variable, we used the KMKB scales which are short scales for the assessment of locus of control orientations developed by Jakoby and Jacob (1999) according to the theoretical background of Rotter's social learning theory (Rotter, 1966). These scales consist of two subscales: ILOC (internal locus of control) and ELOC (external locus of control). Each dimension comprises three items and has a *likert* response scale ranging from the negative to the positive pole: (1) *does not apply to me at all*, (2) *hardly applies to me at all,* (3) *applies to me to some extent*, (4) *applies to me to a great extent* and (5) *applies to me to a very great extent.*

If the mean in the ILOC subscale is higher than 3, the respondent is considered to have an internal locus of control. As expected, the correlation between the two subscales is of a negative nature and, therefore, is it only treated as one dummy variable in the overall model: 1 if the respondent has an internal locus of control and 0 if external. All responses which showed inconsistencies in this matter were disregarded.

The last set of question tests the respondent's risk aversion. This variable was tested by presenting the respondents with ten paired lottery-choice decisions suggested by Holt and Laury (2002). These pairs are structured so that the lesser payoff in choice "A" is always worth more than the lesser payoff in choice "B". Initially, the chance of the high payoff is 10% and the low payoff 90%. With each step, the probability of the high payoff steadily increases by 10%. When the probability of the high payoff is low, choosing the "B" lottery is seen as the risky decision. As the probabilities change, the expected value of "B" over "A" increases. The payoffs for the lottery choices in the experiment were selected so that the crossover point would provide an interval estimate of a subject's coefficient of relative

risk aversion: "*a risk-neutral person would choose A four times before switching to B*". This variable is also treated as a dummy in the overall model where the value 1 is attributed to a risk-lover respondent and 0 if the respondent is risk-averse or risk-neutral.

4.2. VARIABLE DESCRIPTION

For econometric analysis of the survey data, the chosen platform was *STATA*. The variables considered are the following:

- Political Orientation – two discrete 5-scale variables "*Left-Right"* and "*Libertarian-Authoritarian*";
- Financial literacy – 4-scale discrete variable "*Financial Literacy*";
- Age – Four dummy variables for each age interval – "*18-24*", "*25-39*", "*40-55*" and "*55+*";
- Gender – dummy variable "*Female*" – 1 if the respondent is a female, 0 if the respondent is a male;
- Religion – dummy variables "*Catholic*" – 1 if the respondent is catholic, 0 if the respondent is Jew, Muslim, atheist, Cristian protestant or other;
- Highest level of education, expressed in complete years of education – Five dummy variables for each level – "*Less than 9th Grade"*; "*9th Grade"*; "*12th grade"*; "*Bachelor's"* (which also includes two-year polytechnic technical courses); "*Master's degree or MBA"* and "*PhD*";
- Monthly household income expressed in euros – Five dummy variables for each interval – "*Less than 1000*", "*1001-2000*", "*2001-3000*", "*3001-4000*", "*4001-5000*" and "*More than 5000*";
- Region – dummy variable "*city*" – 1 if the respondent lives in the Portuguese metropolitan areas of Lisbon or Porto, 0 otherwise;
- Personality traits – 5 continuous variables "*extroversion", "agreeableness", "openness", "consciousness",* and *"neuroticism"*;
- Risk aversion – dummy variable "*Risk Lover*" – 1 if the respondent is a risk-lover and 0 if the respondent is risk-averse or risk-neutral;
- Locus of control – dummy variable "*Internal Locus of Control*" - 1 if the respondent has an internal locus of control and 0 if it has an external locus of control;

When constructing the model, we encountered some obstacles, and, for this reasoning, some adaptions had to me made. Variables for occupation and marital status were excluded as no significance was achieved in any model. Variables for ethnic group and immigration status were also not included given that the small number of observations with these characteristics would make it challenging to draw robust conclusions.

4.3. DATA ANALYSIS

In total, the survey recorded 723 responses. However, after applying exclusion criteria, 258 participations were excluded: 145 related to the questions assessing risk profiles and 113 from inconsistencies with the assessment of the locus of control. 465 valid observations remained for analysis. Building on this dataset, several statistics and Figures were produced and are presented in *Appendix 8.2 Descriptive Statistics*.

Of the valid observations, and by observing Figure 1, we can retrieve that, on the *Left-Right* dimension, 48% of the respondents were placed in the *Centre* as it appears in the position with the highest frequency followed by the positions *Centre-Left* and *Centre-Right* with 31% and 13%, respectively. The two least frequent positions are the extremes *Left* and *Right* with only 6% and 3%, respectively. The mean value on this variable is 3.24 with a standard deviation of 0.85 (Table 1). The *Libertarian-Authoritarian* dimension follows the same distribution pattern: 46% of the respondents were place in the *Centre*, followed by 32% and 15% in the *Centre-Libertarian* and *Centre-Authoritarian*, respectively and, lastly, the extreme positions *Libertarian* and *Authoritarian* with 4% and 3%, respectively. The mean value on this variable is 2.80 with a standard deviation of 0.85 (Table 1).

Regarding financial literacy (Figure 2), the results are quite surprising. 34% of the respondents answered correctly to all the three questions while only 11% failed all the questions. 37% answered two out of the three questions correctly and the remaining 19% only answered one of the questions correctly. This variable has a mean value of 1.94 correct answers with a standard deviation of 0.98 (Table 1). The question with the highest number of correct responses was the understanding of interest rates, with 73% of the respondents answering this question correctly. 68% of the surveyed individuals correctly selected the option on the question regarding the understanding of inflation, while the question on the understanding of risk diversification only received 52% correct answers.

Using the descriptive statistics in Table 1, it is possible to draw conclusions about the characteristics of the surveyed individuals. With regard to education, there is a convergence in the distribution in the "Bachelor's" category with 36%, with the two utmost categories, less than 9th grade and PhD, being the ones that registered the least number of responses with only 2% and 6% respectively. 59% of the respondents are females, 71% are catholic, and 49% live in a big city. Regarding the locus of control, 71% of the respondents have internal locus of control, and with respect to risk aversion profiles, 28% of the respondents are risk-lovers. We can also observe in that the age interval that registered the larger number of individuals was 25 to 39 years old with 34%, and individuals with more than 55 years old were the least frequent, with only 13%. The average monthly income distribution peaks in the 1001-2000 interval with 42%, showing a decreasing trend as the income increases with the two highest income intervals only accounting for 5% and 6% of the surveyed individuals.

There are also interesting analyses to be mentioned by crossing the various variables with each other. By focusing on the number of correct financial literacy questions for each category in the *Left-Right* dimension (Figure 3), we can observe a clear tendency for financially illiteracy (answering one question right at most) among those individuals choosing the utmost positions. From the individuals who were placed in the *Left* and *Right* position, 57% and 23% failed to answer any question correctly, respectively, and 4% and 38% only managed to answer one out of the three questions correctly. This can be translated into 61% of the individuals in each category considered to be financially-illiterate. On the same line of thought, the financially-literate individuals (individuals who answer two or three questions correctly) show a tendency to be placed in the centre positions, leaning towards *Centre-Right.* From the individuals placed in the *Centre*, 42% and 39% answered all three and two out of three questions correctly, respectively, which translates into 81% of the individuals considered to be financially-literate. The category that presents the largest number of individuals who answered the three questions correctly is the *Centre-Right* position with 59%. From this category, 32% answered two questions correctly, which translates into an overwhelming 91% of the surveyed individuals as being financially-literate. The evidence on the *Centre-Left* position suggests that 54% of respondents are considered financially-literate, with 15% answering three questions correctly.

The evidence crossing the same two variables on the second political orientation (Figure 3) does not appear to have as much of an overwhelming tendency, with a slight lean towards the utmost position *Libertarian*. The category with the largest number of individuals who answered the three questions correctly is the *libertarian* position, with 50%, and an overall percentage on financially-literate individuals of 80%. In the *Centre-Libertarian* position, 35% and 39% of the individuals answered three and two questions correctly, respectively, and in the *Centre* position, the corresponding indicators are 35% and 36% bringing the overall financially-literate individuals at 74% and 71%, respectively. In the *Centre-Authoritarian* category, the percentage of financially-literate individuals is 66%, with 26 answering all three questions correctly. On the other utmost position, *Authoritarian*, the sample is evenly distributed in terms of correct answers, with 29% answering zero and one question correctly each and 21% answering two and three questions correctly.

Both correlations between financial literacy and the two political orientations dimensions are negative (Table 2), which suggest that higher financial literacy leans individuals towards *Right* and *Libertarian*. However, the correlation observed between financial literacy and the *Left-Right* spectrum is much more pronounced than when we switch to the *Libertarian-Authoritarian* dimension (-0.3047 *versus* -0.119), suggesting that the relationship between financial literacy and the first dimension is stronger.

A very important analysis is in terms of the highest level of education since education and financial literacy might be expected to have some relationship with each other (Figure 4). The results suggest that this relationship is visible: from the respondents who answered all of the three questions correctly, 86% have university degrees and only 3% possess a highest educational level equal to or less than the 9th grade. On the other hand, from the respondents who fail to answer any question correctly, 40% possess a highest educational level equal to or less than the 9th grade, and only 24% have university degrees. This tendency is visible across the entire range.

Observing the correlation matrix (Table 2), we notice that the correlation between financial literacy and low levels of highest education (less than 9th grade, 9th grade, and 12th grade) is negative, which is to be expected, with a sign switch when the highest level of education is a Bachelor's degree. However, the highest correlation indexes between these two variables are not satisfactory (-0.2949 and 0.2207). This can interpreted as, while

slightly correlated, financial literacy and the highest level of education do not express the same as they capture different features and should, therefore, be analysed independently.

By observing the levels of highest education for each category in the *Left-Right* dimension (Figure 5), there is also a clear tendency of individuals with higher levels being placed in the position *Centre*. In this position, 74% of the individuals have higher university degrees, with 8% being PhDs, and only 4% having a level equal to or below the 9th grade. Observing the two adjacent positions, 71% and 60% of the respondents have higher university degrees in the *Centre-Right* and *Centre-Left* positions, respectively. On the same line of thought, there is also a clear tendency of individuals with lower education levels to be placed in the utmost positions, with 38% of the individuals in the *Right* position and 50% in the left position having a highest educational level equal to or below 9th grade. However, when observing higher levels of education, these two positions differ to some extent. 38% of individuals placed in the *Right* position have at least a Bachelor's degree, from which 8% are PhDs, while in the left position this is only true for 14% of the respondents, with not a single PhD.

Crossing the same variables on the other dimension (Figure 5) brings much more pronounced results. Higher education levels show a clear lean towards being *Centre-Libertarian*. In this category, 78% of the individuals have higher university degrees, from which 28% are Master's degrees and 9% PhDs. In the adjacent categories, *Libertarian* and *Centre*, 75% and 70% of the surveyed individuals have a higher university degree, from which 10% and 6% are PhDs, respectively. The same tendency continues towards the end of the spectrum. In the *Centre-Authoritarian* position, only 27% of the individuals have higher university degrees. In the utmost position, *Authoritarian,* 58% of the individuals have a highest level of education below the 12th grade and only 14% have higher university degrees.

When observing the correlations between highest education levels and both political dimensions (Table 2), we can clearly see a difference. While both show a switch in sign when considering higher university degrees, only one of the correlations between an education variable and the *Left-Right* spectrum is higher than 10% whilst when considering a second *Libertarian-Authoritarian* dimension, the results are far more satisfactory

suggesting that education is more correlated with the *Libertarian-Authoritarian* rather than the *Left-Right* dimension.

We can also comment and draw some conclusions about the cross-variable information of other indicators. When we observe the gender variable there appears to be some tendency for females to lean towards *Left* on the economic spectrum and an overwhelming tendency to not be placed in the *Authoritarian* category (Figure 6). As for religion (Figure 7), the surprise arises from the fact that the position that captures the smallest number of Catholics is the *Right*, with only 31%; however, this variable does not appear to have a clear tendency along the economic spectrum. When considering the other dimension, the tendency is very strongly visible as 93% of respondents that are placed in the *Authoritarian* category are Catholics. This percentage steadily decreases along the spectrum, with the position *Libertarian* registering 70% non-Catholics. This empirical evidence suggests that religion might be normally associated with *conservative or Right*-wing views because it considers a one-dimensional spectrum which fails to separate economic and freedom values.

Regarding age (Figure 8), there is no clear evidence of a tendency in the economic spectrum. However, there is a visible inclination for leaning towards *Authoritarian* when age increases. 65% of respondents who were placed in the *Libertarian* category are 18 to 24 years old and 57% of the respondents placed in the *Authoritarian* category are older than 55 years old. The empirical evidence for the variable city (Figure 9) follows the same results. There is no clear evidence of a tendency when considering the economic spectrum, but there is a strongly visible relationship with the other dimension. 90% of respondents who were placed in the *Libertarian* category live in a big city and not a single respondent who lives in a big city is placed in the *Authoritarian* position.

As of average monthly income (Figure 10), there is a clear tendency for individuals with higher income to have *Right*-leaning views as 46% of these individuals earn more than 5000 euros and not a single one earning less than 3000 euros. On the other hand, from the respondents placed in the *Left* position, only 4% are placed in the two higher income categories, and an overwhelming 64% earn less than 2000 euros per month. This variable does not appear to have a clear tendency along the second spectrum. When observing the variable for locus of control (Figure 11), there appears to be some tendency for internal locus to lean towards *Centre-Right* and *Centre-Libertarian* with 90% and 76% of the placed

respondents having an internal locus of control, respectively. And, finally, regarding risk profiles (Figure 12), evidence suggests that a considerable increase in risk propensity is associated with leaning *Left* on the economic spectrum as 61% of the respondents who fall in this category are risk-lovers. There is no evident tendency in a second dimension.

5. EMPIRICAL ANALYSIS AND DISCUSSION

This section presents the analysis of the econometric models. First, we discuss the statistical validity of results and then, the partial effects of the significant determinants over the different probabilities of interest are analysed. All results can be found in Tables 3 and 4 of *Appendix 8.3. Regression Results*.

5.1. MODEL VALIDITY

Both models were not rejected by the test for misspecification (*RESET*), which means that, in general terms, the validity of the functional form of all models presented is documented at a 95% significance level.

To test for global significance, the *LR* rejects the null hypothesis in both panels (p-values < 0.001), indicating that the set of regressors considered is globally significant. On the other hand, we highlight the fact that the groups of variables considered did not always prove to be jointly significant. The LR test for jointly significance was conducted for the variables of highest level of education (*9^{th} Grade, 12^{th} Grade, Bachelor's, Master's and PhD*), Income (*1001-2000, 2001-3000, 3001-4000, 4001-500, +5000*) and Age (*25-39, 40-55, +55*). For the test for jointly significance of Age we can see that, in the *Left-Right* dimension, constraining these parameters to zero (leaving out these predictor variables) significantly increases the fit of the model, evidenced by the reported p-value of 0.389. The same conclusion is brought by the jointly significance of the variables for highest level of education. Based on the p-value of 0.602, we are not able to reject the null hypothesis, indicating that including these variables does not create a statistically significant improvement in the fit of the model. On the contrary, the *LR* test for the variables of income evidences the exact opposite. On a *Libertarian-Authoritarian* dimension, the fit of the model is not increased by the joint inclusion of these variables in the model.

These findings are consistent with the asymptotic *t* tests for individual significance, as none of the variables for age or highest level of education are individually significant on the *Left-Right* dimension and, on the same line of thought, none of the variable for Income are

individually significant on the *Libertarian-Authoritarian* dimension, at a 95% confidence level.

Still regarding individual significance, out of the 24 variables included in both models, we were able to achieve significance for nine variables in the *Left-Right* dimension and for 14 variables in the second dimension, all at a 95% confidence level.

5.2. ANALYSIS OF PARTIAL EFFECTS

5.2.1. FINANCIAL LITERACY

Our main explanatory variable of interest, financial literacy, shows quite interesting and stable results in both models. In the model that seeks to explain political orientation in economic terms, the *Left-Right* dimension, financial literacy emerges as a significant explanatory at a confidence level of 99% with a p-value of 0.000. Alternatively, when the model in question intends to explain a *Libertarian-Authoritarian* ideology, the variable in question ceases to be significant at a 95% confidence level, with a p-value of 0.062. This suggests that financial literacy is explanatory for an ideological dimension that refers to economic freedom, but not the dimension involving personal freedom, at a 95% confidence level.

The marginal effects measure the change in the probability of choosing a category within the five possibilities for the independent variable associated with answering an additional financial literacy question correctly. The reported marginal effect of financial literacy on the probability of belonging to the categories *Right*, *Centre-Right* and *Centre* are individually statistically significant at a 95% confidence level and has a positive sign, which implies that answering one additional financial literacy correctly increases the likelihood of belonging to these categories. In contrast, the marginal effects of financial literacy on the categories *Centre-Left* and *Left* are individually statistically significant at a 95% confidence level but show a negative sign.

The empirical evidence suggests that answering one additional question correctly increases the probability of belonging to the category *Right* in 0.007. On the other hand, the same shift decreases the probability of belonging to the category *Left* in 0.012. However, the sample of responses in the utmost categories is relatively small and, for this reason, the partial effects in these categories must be interpreted carefully.

Considering the centre positions, we have a more robust understanding of the results. It is estimated that, on average, the probability of belonging to the category *Centre-Right* increases by 0.053 when answering one additional financial literacy question correctly. On the same line of thought, an additional correct answer to financial literacy questions increases the likelihood of being placed in the category *Centre* by 0.065. In contrast, the partial effect of answering one additional financial literacy question correctly decreases the likelihood of being place in the *Centre-Left* position by 0.105.

The interpretation that we can draw from these results is that, in an economic spectrum, financial knowledge increases the probability of respondents having *Centre* and *Centre-Right* political beliefs rather than moving towards the *Left* end of the spectrum. This is also supported by the reported coefficient signal. Because the coefficient of financial literacy has a negative value, we can conclude that higher financial literacy increases the likelihood of the respondent moving towards *Right* in the economic political spectrum.

When considering the *Libertarian-Authoritarian* dimension, the reported marginal effects are not as evident or significant. The average marginal effects of financial literacy on the probability to belong to either category *Libertarian* or *Authoritarian* are small and not statistically significant at any conventional level. There is a somewhat significant positive association of financial literacy with the probability of belonging to the *Centre* category at a 95% confidence level with a reported marginal effect of 0.023.

5.2.2. HIGHEST LEVEL OF EDUCATION

One important variable that must be interpreted is highest level of education. As mentioned previously, it can be expected that education and financial literacy might have some relationship with each other. This variable also presents consistent and curious results.

In the model that intends to explain political orientation in economic terms, the *Left-Right* dimension, the highest level of education turns out not statistically individually significant at any conventional level for all variables related to education, with p-values over 0.500. Alternatively, when the model in question seeks to explain a *Libertarian-Authoritarian* ideology, the variables in question emerge as significant at 99% and 95% confidence levels, with a p-values of 0.000 and 0.015.

The reported marginal effects measure the change in the probability of choosing a category within the five possibilities for the independent variable associated with the

specific highest level of education compared to our educational level of reference (Less than 9th Grade).

When considering the *Left-Right* spectrum, no individual significance was achieved in any of the reported marginal effects at any conventional level. Compared to the highest educational level of reference, all the higher levels express the same pattern in the *Libertarian-Authoritarian* spectrum: there is a positive association with being placed in the *Centre-Libertarian* position, which shifts when reaching the *Centre* category. It is estimated that the probability of belonging to the category *Centre-Libertarian* increases by 0.357 when the respondent has completed the 9th Grade, by 0.502 when the respondent has completed the 12th Grade, by 0.571 when the level is a Bachelor's degree and by 0.511 when completed a Master's degree, compared, once again, with the reference level, all individually statistically significant at a 95% confidence level.

On the other hand, when we consider the *Centre* category, all these marginal effects switch signal. The likelihood of a respondent who completes the 9th grade being placed in the *Centre* decreases by 0.340. This probability continues to decrease as the educational level increases, with the likelihood of a respondent being placed in this category decreasing by 0.617 when the individual has a PhD. The same evidence is reported when considering the *Centre-Authoritarian* category, all individually statistically significant at a 95% confidence level. Notice the pattern of higher education being associated with higher expressions of *Libertarian* preferences.

On the utmost positions, none of the partial effects are individually statistically significant at a 95% confidence level except for, interestingly, the probability of having a PhD increasing the likelihood of placing in the *Libertarian* position by 0.442. However, once again, the sample of responses in the most extreme categories is relatively small and for this reason, the partial effects in these categories must be interpreted carefully.

The interpretation that we can draw from these results is that, in the individual freedom spectrum, higher education increases the probability of respondents having *Libertarian* political beliefs rather than moving towards the *Authoritarian* end of the spectrum. These conclusions are also supported by the reported coefficient signals. Compared to the reference educational level, all levels above the 9th Grade have negative coefficient values,

which implies that having completed these degrees increases the likelihood of moving towards *Libertarian*.

5.2.3. OTHER VARIABLES

In this section, we will also discuss the effects of other variables taken from the literature and included in our model. The estimates in both panels present very consistent findings. The variables of gender, religion, age, and region proved to be significant for modelling political orientation in the personal freedom spectrum, the *Libertarian-Authoritarian* dimension, but ceased to be explanatory in the economic freedom one, the *Left-Right* dimension.

It is estimated that, on average, females are more likely to lean towards *Libertarian* ideology as expressed by the negative coefficient signal, significant at a 99% confidence level. The magnitude of the partial effect of placing in the *Centre-Libertarian* category is 0.111 when the respondent is a female and becomes negative at -0.061 when considering the *Centre* category, remaining negative in the adjacent *Centre-Authoritarian* category at -0.054, at a 99% confidence level.

Regarding Catholicism, the empirical evidence suggests the opposite. A catholic is more likely to fall in the *Authoritarian* categories. The likelihood of an individual being in the *Centre-Libertarian* category decreases by 0.160 when being a Catholic and, on the other hand, increases by 0.108 and 0.062 when being in the *Centre* or the *Centre-Authoritarian* categories, respectively, at a 99% confidence level.

The marginal effects reported for the variables regarding Age also show robust results with a clear increase in the likelihood of leaning towards *Authoritarian* ideology as age increases. Compared to the reference age interval, 18 to 25 years old, all age intervals show negative partial effects on the *Libertarian* leaning side of the spectrum, steadily increasing in magnitude as age increases.

On average, the probability of an individual being placed in the *Centre-Libertarian* category when aged 25 to 39 years old decreases by 0.107 and by 0.192 when over 55 years old, when compared to the reference interval, at a 99% confidence interval. On the contrary, the probability of an individual being *Centre* or *Centre-Authoritarian* increases by 0.057 and 0.054, respectively, when as individual is 25 to 39 years old and by 0.051 and 0.140

when over 55 years old, respectively, when compared to the reference interval, at a 99% confidence interval.

When considering the variable for region, the magnitude of the partial effects is large. It is estimated that, on average, individuals who live in big cities are more likely to lean towards *Libertarian* ideology, as expressed by the negative coefficient signal, significant at a 99% confidence level. The likelihood of an individual being in the *Centre-Libertarian* category increases by 0.424 when living in the Portuguese metropolitan areas. This magnitude becomes negative when switching to *Centre* and *Centre-Authoritarian* positions, decreasing the likelihood of being placed in these categories by 0.238 and 0.214, respectively, when the respondent lives in a big city, at a confidence level of 95%.

Contrary to the variables discussed above, the income variable showed to be significant when explaining the economic dimension and ceased to be explanatory when considering the *Libertarian-Authoritarian* spectrum. When compared to the reference income interval (lowest level), the variables for monthly income between 3001 and 4000 (95% confidence level), 4001 and 5000 (99% confidence level), and over 5000 (99% confidence level), are individually statistically significant. All three of these variables have a negative coefficient signal which implies that higher income increases the likelihood of moving towards *Right* in the *Left-Right* spectrum. It is estimated that the likelihood of being placed in the *Centre-Right* category increases by 0.201 and 0.329 when the monthly income is between 4001 and 5000 and over 5000, respectively. On the other hand, this probability decreases by 0.232 and 0.309 when considering the *Centre-Left* category, for the same income gaps.

The variable for locus of control is one of the few that appears to be significant in both panels. In the two models, the coefficient signal for internal locus of control is negative, which translates to higher likelihood of leaning towards *Right*, at a 99% confidence level, and *Libertarian*, at a 95% confidence level, when the individual has an internal locus of control. The empirical evidence suggests that the likelihood of being in the *Centre-Right* category increases by 0.100 when the individual has an internal locus of control and decreases by 0.184 and 0.231 when considering the *Centre* and *Centre-Left* positions, respectively. On the same line of thought, the likelihood of being in the *Centre-Libertarian* category increases by 0.098 when the individual has an internal locus of control and

decreases by 0.051 and 0.050 when considering the *Centre* and *Centre-Authoritarian* positions, respectively.

When considering risk aversion, being a risk lover showed to be significant when explaining the economic dimension and ceased to be explanatory when considering the *Libertarian-Authoritarian* spectrum. On average, the probability of placing in the *Centre-Right* and *Centre* categories decreases by 0.041 and 0.050, respectively, when an individual is a Risk Lover and decreases by 0.081 when we consider the adjacent *Centre-Left* category. This corroborates the literature that risk propensity is associated with *Left*-wing views.

The final variables to be discussed are the personality traits. The only personality trait with reported explanatory power on both models is openness, at a 99% confidence level. The evidence suggests that higher levels of openness are associated with leaning towards *Left* and *Libertarian*. Extroversion presents a significant p-value for the *Libertarian-Authoritarian* dimension at a 95% confidence level, but the partial effects turn out to be very low and almost negligible. The variables for agreeableness and consciousness emerges as explanatory at a confidence level of 99% for the *Left-Right* dimension. The reported coefficient signals and partial effects associate higher levels *of* agreeableness and lower level of consciousness with *Left*-leaning views. No significance was achieved in any model for the variable neuroticism.

6. CONCLUSION

The present work provides some answers on the determinants of an individual's political orientation, with special attention to one determinant: financial literacy. For this purpose, two *ordered probit models* were constructed with data retrieved from a questionnaire in which several determinants taken from the literature were tested, as well as the new variable of interest and political orientation in two dimensions: economic freedom and individual freedom.

From the analysis of the effect of financial literacy within the *Left-Right* dimension, an individual’s political orientation is affected by his or her level of financial literacy, which corroborates Hypothesis 1. The empirical results suggest that financial literacy increases the probability of an individual having *Centre* or *Right*-wing political views, in detriment of *Left*-wing views. On the other hand, when considering the *Libertarian-Authoritarian*

dimension, an individual's political orientation is not affected by his or her level of financial literacy, which allows us to reject the second hypothesis.

Furthermore, we provided an in dept analysis of the effect of the highest level of education as an alternative measure of financial literacy and the results suggest that the latter captures different features from more general measures of education, such as years of schooling, and should, therefore, be considered a distinct variable. The results suggest that, on the dimension that seeks to explain economic freedom, the major financial literacy effect absorbs the highest level of education effect, making it non-significant. Conversely, the effect of the highest level of education is predominant in the personal freedom dimension, suggesting that higher levels of education are associated with leaning towards *Libertarian* beliefs.

The third hypothesis tested was the possibility of some variables influencing an individual's political orientation within the *Left-Right* dimension and not influencing an individual's political orientation within the *Libertarian-Authoritarian* dimension and vice-versa. Several variables were only proved significant in one of the dimensions, such as financial literacy, average income level, risk aversion, consciousness and agreeableness in the *Left-Right* dimension, and highest level of education, gender, religion, age, region and extroversion in the *Libertarian-Authoritarian* dimension. Only locus of control and openness displayed individual significance on both dimensions. This corroborates the third hypothesis that some variables may influence a specific dimension of measuring political orientation but not the other. This can be translated into the motivation that gave rise to this hypothesis: variables with economic links affect the dimension that refers to economic freedom such as financial literacy and average monthly income and, on the contrary, other variables such as region, age, ethnicity, or religion explain political orientation on a personal freedom dimension better.

6.1. LIMITATIONS

In this section we intend to acknowledge the limitations of the presented study. These matters are discussed not to discourage further work, but rather to point to courses of act.

The main limitation of this study was the use of a sample that may not represent properly the population of interest as the sampling frame was based on social networks (Facebook, LinkedIn, Instagram) and in direct contact with groups of friends and family. Another aspect

to take into consideration is that the questionnaire was answered only by Portuguese individuals: it is important to note that the behaviour and preferences of individuals may differ in different geographies. The use of the findings of this study should take the above mentioned into consideration. In particular, variables that were retrieved from the literature as explanatory, such as immigration status and ethnic group, were not included in the model due to the rarity of sampling units with these characteristics and the consequent lack of statistical significance. Additionally, the small number of observations at the extremes of the political orientation variables requires that the interpretation of partial effects in these cases is taken carefully.

There are limitations adjacent to the survey developed. Keeping in mind the objective of not making the survey too long and tiring, which would inevitably lead to fewer responses, more questions could have been used to strengthen the analysis of some variables. For example, the reduction of the items of the BFI-44 to less than a fourth, or the seek for short scales for the assessment of locus of control orientations. We can also mention that the measures for political orientation were adapted from the British Social Studies which are designed for British individuals and may incur in some adaption bias.

Although we are enthusiastic regarding the potential inherent in research on financial literacy and politics, the issues highlighted here should make clear that we also see possible stumbling points.

6.2. FURTHER RESEARCH

While recognizing the limitations of our analysis, we believe that this study is a relevant contribution to understanding the determinants for political orientation, such as financial literacy, so it can and should be complemented with other investigations. In addition, the research itself opens space for deeper analyses of other determinants beyond a traditional *Left-Right* spectrum.

Similar research with more variables, different scales, or methods of analysis of the significant variables, in other geographies, with a larger sample size and with fewer sample and participation biases, might be of interest at the comparative level of findings.

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8. APPENDICES

8.1. SURVEY

Please select the option that best suits your level of agreement with the statement.	I strongly disagree	Disagree	I do not agree or disagree	I agree	I strongly agree
Government should redistribute income from the better off to those who are well off.	•	•	•	•	•
Big business benefit owners at the expense of workers.	•	•	•	•	•
Ordinary working people do not get their fair share of the nation's wealth.	•	•	•	•	•
There is one law for the rich and one for the poor.	•	•	•	•	•
Management will always try to get the better of employees if it gets the chance.	•	•	•	•	•
Young people today don't have enough respect for traditional Portuguese values.	•	•	•	•	•
Censorship of films and magazines is necessary to upload moral standards.	•	•	•	•	•
People who break the law should be given stiffer sentences.	•	•	•	•	•
For some crimes, the death penalty is the most appropriate sentence.	•	•	•	•	•
School should teach children to obey authority.	•	•	•	•	•
The law should be obeyed even if a particular law is wrong.	•	•	•	•	•

Suppose you have 100€ in a savings account with an interest rate of 2% per year. If you never withdrew any money from this account, how much do you think there would be after 5 years?	• More than 102€ • Exactly 102€ • Less than 102€ • Don't know • Prefer not to say
Suppose inflation is 2% per year and you have put money into a savings account with an interest rate of 1% per year. Assuming that you buy the same things today and in one year's time, do you think you would be able to buy more with the money in this account in one year than today, less in one year than today, or do you think you would be able to buy exactly the same things in one year as today?	• More than today • Exactly the same as today • Less than today • Don't know • Prefer not to say
Which one of the following do you think is the riskier asset to invest in?	• An individual share in a company • A portfolio of different companies shares • The risk is the same in both cases • Don't know • Prefer not to say

Age:	• 18-100	
Gender:	• Female • Male	• Non-Binary
Ethnic group:	• White / of European Origin • Black / of African Origin • Asian / of Asian Origin	• Gypsy / of Gypsy origin • Other: _____
Religion:	• Catholic • Protestant Christian • Jewish	• Muslim • I'm not religious • Other: _____
Highest Educational Qualification:	• 9th year • 12th year • Bachelor's degree	• Master's • PhD • Other: _____
Average Monthly Household Income:	• Less than 1000 • Between 1001 and 2000 • Between 2001 and 3000	• Between 3001 and 4000 • Between 4001 and 5000 • More than 5000
Occupation:	• Student • Student Worker • Self-Employed • Employee's Account Worker	• Unemployed • Retired • Other: _____

Marital status:	• Single • Divorced • Married • Widower
Immigration Status:	• Portuguese Citizen resident in Portugal • Foreign Citizen and Resident in Portugal (Immigrant) • Citizen Portuguese and Resident Abroad (Emigrant)
Region:	• North Region • Algarve • Centre Region • Azores or Madeira Archipelagos • Lisbon and Tagus Valley • Other: ____ • Alentejo
Display This Question If Region: = North Region ***Do you live in the Metropolitan Area of Porto?***	• Yes • No
Display This Question If Region: = Lisbon and Tagus Valley ***Do you live in the Metropolitan Area of Lisbon?***	• Yes • No

Please select the option that best suits your personality. I see myself as someone who...	I strongly disagree	Disagree	I do not agree or disagree	I agree	I strongly agree
... is reserved.	•	•	•	•	•
... is generally trusting.	•	•	•	•	•
... tends to be lazy.	•	•	•	•	•
... is relaxed, handles stress well.	•	•	•	•	•
... has few artistic interests.	•	•	•	•	•
... is outgoing, sociable.	•	•	•	•	•
... tends to find fault with others.	•	•	•	•	•
... does a thorough job.	•	•	•	•	•
... gets nervous easily.	•	•	•	•	•
... has an active imagination.	•	•	•	•	•

Please select the option that best suits your personality:	Applies to me to a very great extent	Applies to me to a great extent	Applies to me to some extent	Hardly applies to me at all	Does not apply to me at all
I like taking responsibility.	•	•	•	•	•
I find it best to make decisions myself, rather than to rely on fate.	•	•	•	•	•
When I encounter problems or opposition, I usually find ways and means to overcome them.	•	•	•	•	•
Success often depends more on luck than on effort.	•	•	•	•	•
I often have the feeling that I have little influence over what happens to me.	•	•	•	•	•
When I make important decisions, I often look at what others have done.	•	•	•	•	•

Assuming you're facing ten lottery situations, select what your choice would be in each of them.	•10% chance of winning 100€ and 90% chance of winning 80€ •10% chance of winning 190€ and 90% chance of winning 5€ •20% chance of winning 100€ and 80% chance of winning 80€ •20% chance of winning 190€ and 80% chance of winning 5€ •30% chance of winning 100€ and 70% chance of winning 80€ •30% chance of winning 190€ and 70% chance of winning 5€ •40% chance of winning 100€ and 60% chance of winning 80€ •40% chance of winning €190 and 60% chance of winning 5€ •50% chance of winning 100€ and 50% chance of winning 80€ •50% chance of winning 190€ and 50% chance of winning 5€ •60% chance of winning 190€ and 50% chance of winning 80€ •60% chance of winning 190€ and 50% chance of winning 5€ •70% chance of winning 190€ and 50% chance of winning 80€ •70% chance of winning 190€ and 50% chance of winning 5€ •80% chance of winning 190€ and 50% chance of winning 80€ •80% chance of winning 190€ and 50% chance of winning 5€ •90% chance of winning 190€ and 50% chance of winning 80€ •90% chance of winning 190€ and 50% chance of winning 5€ •100% chance of winning 190€ and 50% chance of winning 80€ •100% chance of winning 190€ and 50% chance of winning 5€

8.2. DESCRIPTIVE STATISTICS

Table 1 – *Summary Statistics*

Variables	**Mean**	**Std. Dev**	**Min**	**Max**
Left-Right	3.243	0.853	1	5
Libertarian-Authoritarian	2.798	0.850	1	5
Financial Literacy	1.935	0.976	0	3
Female	0.591	0.492	0	1
Catholic	0.712	0.453	0	1
18-24	0.252	0.434	0	1
25-39	0.338	0.473	0	1
40-55	0.277	0.448	0	1
+55	0.133	0.340	0	1
City	0.486	0.500	0	1
Less than 9th Grade	0.019	0.138	0	1
9th Grade	0.073	0.261	0	1
12th Grade	0.260	0.439	0	1
Bachelor's	0.363	0.482	0	1
Master's	0.224	0.417	0	1
PhD	0.060	0.238	0	1
- 1000	0.129	0.336	0	1
1001-2000	0.419	0.494	0	1
2001-3000	0.254	0.436	0	1
3001-4000	0.095	0.293	0	1
4001-5000	0.047	0.213	0	1
+ 5000	0.056	0.230	0	1
Internal Locus	0.710	0.454	0	1
Risk Lover	0.280	0.449	0	1
Extroversion	3.382	0.862	1	5
Agreeableness	3.632	0.625	1.5	5
Consciousness	3.606	0.714	1.5	5
Neuroticism	3.001	0.955	1	5
Openness	3.643	0.806	1.5	5

Table 2 – *Correlation Matrix*

Variables	*Left-Right*	*Libertarian-Authoritarian*	*F. Literacy*	*Female*	*Catholic*	*18-24*	*25-39*	*40-55*	*+55*	*City*	*Less than 9th Grade*	*9th Grade*	*12th Grade*	*Bachelor's*	*Master's or MBA*	*PhD*	*<1000*	*1001-2000*	*2001-3000*	*3001-4000*	*4001-5000*	*+5000*	*Internal Locus*	*Risk Lover*	*Extroversion*	*Agreeableness*	*Conscientiousness*	*Neuroticism*	*Openness*
Left-Right	*1.0000*																												
Libertarian-Authoritarian	*0.0233*	*1.0000*																											
Financial Literacy	*-0.3047*	*-0.1119*	*1.0000*																										
Female	*0.1241*	*-0.1103*	*-0.0909*	*1.0000*																									
Catholic	*0.0589*	*0.2457*	*-0.0713*	*0.1183*	*1.0000*																								
18-24	*-0.0374*	*-0.2531*	*0.0079*	*-0.0020*	*-0.2001*	*1.0000*																							
25-39	*0.0045*	*-0.0175*	*-0.0694*	*0.0291*	*-0.0277*	*-0.4140*	*1.0000*																						
40-55	*0.0319*	*0.1476*	*0.0903*	*0.0069*	*0.1609*	*-0.3593*	*-0.4424*	*1.0000*																					
+55	*-0.0005*	*0.1530*	*-0.0324*	*-0.0472*	*0.0819*	*-0.2274*	*-0.2800*	*-0.2430*	*1.0000*																				
City	*0.0004*	*-0.5592*	*0.0908*	*0.0468*	*-0.1698*	*0.1402*	*0.0154*	*-0.1124*	*-0.0523*	*1.0000*																			
Less than 9th Grade	*0.0149*	*0.2358*	*-0.1988*	*-0.0420*	*-0.0829*	*-0.0815*	*-0.0343*	*0.1221*	*-0.0092*	*-0.1054*	*1.0000*																		
9th Grade	*0.1623*	*0.2031*	*-0.2949*	*0.0822*	*-0.0219*	*-0.0677*	*0.0440*	*-0.0080*	*0.0356*	*-0.0913*	*-0.0395*	*1.0000*																	
12th Grade	*0.0840*	*0.1644*	*-0.2222*	*0.0044*	*0.1284*	*-0.0163*	*-0.0918*	*0.0266*	*0.1134*	*-0.1648*	*-0.0833*	*-0.1666*	*1.0000*																
Bachelors	*-0.0581*	*-0.1466*	*0.1234*	*0.0005*	*0.0267*	*0.1389*	*-0.0668*	*-0.0588*	*-0.0070*	*0.0793*	*-0.1062*	*-0.2122*	*-0.4481*	*1.0000*															
Master's or MBA	*-0.0986*	*-0.1458*	*0.2155*	*-0.0473*	*-0.1029*	*-0.0852*	*0.1625*	*-0.0098*	*-0.1043*	*0.1492*	*-0.0754*	*-0.1508*	*-0.3183*	*-0.4056*	*1.0000*														
PhD	*-0.0510*	*-0.1101*	*0.2207*	*0.0081*	*-0.0385*	*0.0199*	*-0.0087*	*0.0249*	*-0.0461*	*0.0433*	*-0.0356*	*-0.0711*	*-0.1501*	*-0.1913*	*-0.1359*	*1.0000*													
< 1000	*0.1312*	*0.0312*	*-0.1390*	*0.0328*	*-0.0242*	*0.0134*	*-0.0035*	*-0.0236*	*0.0189*	*-0.0277*	*0.0391*	*0.0397*	*0.0788*	*-0.0108*	*-0.0680*	*-0.0705*	*1.0000*												
1001-2000	*0.1310*	*0.1048*	*-0.0779*	*0.0060*	*0.0692*	*-0.0910*	*0.1489*	*-0.0009*	*-0.0897*	*0.0020*	*-0.0561*	*0.0961*	*0.0622*	*-0.0441*	*-0.0482*	*-0.0136*	*-0.3271*	*1.0000*											
2001-3000	*0.0019*	*-0.0824*	*0.1602*	*0.0122*	*0.0328*	*0719*	*-0.1028*	*0.0360*	*0.0039*	*0.0064*	*-0.0461*	*-0.1068*	*-0.0530*	*0.0834*	*0.0309*	*0.0186*	*-0.2245*	*-0.4956*	*1.0000*										
3001-4000	*-0.0491*	*-0.0961*	*-0.0088*	*0.0146*	*-0.0214*	*0.0665*	*-0.0288*	*-0.0854*	*0.0677*	*0.0384*	*-0.0454*	*-0.0344*	*-0.0745*	*0.0001*	*0.0910*	*0.0417*	*-0.1244*	*-0.2747*	*-0.1885*	*1.0000*									
4001-5000	*-0.1468*	*0.0292*	*0.0667*	*-0.0826*	*-0.0148*	*-0.0592*	*-0.0306*	*0.0429*	*0.0616*	*-0.0546*	*0.1157*	*-0.0626*	*0.0064*	*0.0001*	*-0.0224*	*0.0288*	*-0.0858*	*-0.1894*	*-0.1300*	*-0.0720*	*1.0000*								
+5000	*-0.2782*	*-0.0192*	*0.0161*	*-0.0262*	*-0.1345*	*0.0099*	*-0.0550*	*0.0374*	*0.0147*	*0.0255*	*0.1017*	*0.0395*	*-0.0590*	*-0.0477*	*0.0491*	*0.0171*	*-0.0937*	*-0.2068*	*-0.1419*	*-0.0787*	*-0.0542*	*1.0000*							
Internal Locus	*-0.3069*	*-0.1467*	*0.1277*	*-0.0112*	*0.0533*	*0.0870*	*-0.0042*	*-0.0693*	*-0.0139*	*-0.0131*	*-0.1165*	*-0.1297*	*-0.0310*	*0.0499*	*0.0704*	*0.0424*	*-0.0223*	*-0.0901*	*0.0899*	*0.0125*	*0.0086*	*0.0319*	*1.0000*						
Risk Lover	*0.1260*	*0.0185*	*-0.0522*	*-0.0281*	*0.0472*	*-0.0741*	*-0.0597*	*0.1063*	*0.0376*	*-0.0209*	*0.0516*	*0.0643*	*0.0674*	*-0.0523*	*-0.0699*	*0.0035*	*0.0032*	*0.0533*	*0.0332*	*-0.1195*	*-0.0260*	*-0.0056*	*-0.0344*	*1.0000*					
Extroversion	*0.0187*	*0.0497*	*-0.0065*	*0.0814*	*0.0367*	*0.0163*	*-0.0207*	*-0.0320*	*0.0502*	*-0.0188*	*-0.0441*	*0.0530*	*0.0416*	*-0.0390*	*-0.0222*	*0.0085*	*0.0119*	*-0.0680*	*0.0141*	*0.0231*	*0.0600*	*0.0171*	*0.0222*	*0.0605*	*1.0000*				
Agreeableness	*0.1034*	*0.0281*	*0.0723*	*-0.0166*	*0.1462*	*-0.0752*	*-0.0311*	*0.0726*	*0.0436*	*0.0077*	*-0.1173*	*-0.0595*	*0.0667*	*0.0154*	*0.0144*	*-0.0464*	*-0.0559*	*0.1656*	*-0.0523*	*-0.0862*	*-0.0310*	*-0.0366*	*0.0369*	*-0.0092*	*0.0161*	*1.0000*			
Conscientiousness	*-0.1505*	*0.1652*	*0.0346*	*0.0413*	*0.1482*	*-0.2499*	*-0.0619*	*0.2173*	*0.1189*	*-0.0848*	*0.0556*	*0.0334*	*0.0283*	*-0.0501*	*-0.0331*	*0.0383*	*-0.0080*	*-0.0382*	*0.0273*	*-0.0328*	*0.0307*	*0.0555*	*0.0855*	*0.0246*	*-0.0154*	*0.0155*	*1.0000*		
Neuroticism	*0.1003*	*0.1278*	*-0.0786*	*0.1179*	*0.1227*	*0.1319*	*-0.0867*	*-0.0486*	*0.0161*	*-0.0891*	*0.0899*	*0.1123*	*0.0276*	*-0.0243*	*-0.0683*	*-0.0572*	*0.0534*	*0.0447*	*-0.0447*	*0.0536*	*-0.0640*	*-0.0984*	*-0.0738*	*-0.0108*	*-0.0620*	*-0.0671*	*0.0006*	*1.0000*	
Openness	*0.1656*	*-0.2251*	*0.0063*	*0.0878*	*-0.1022*	*-0.0045*	*0.0765*	*-0.0832*	*0.0089*	*0.1051*	*-0.1606*	*-0.0396*	*0.0347*	*-0.0204*	*0.0489*	*0.0280*	*-0.0285*	*0.0439*	*0.0253*	*0.0475*	*-0.0584*	*-0.1071*	*0.1224*	*0.0114*	*0.1584*	*0.1367*	*-0.0677*	*-0.0156*	*1.0000*

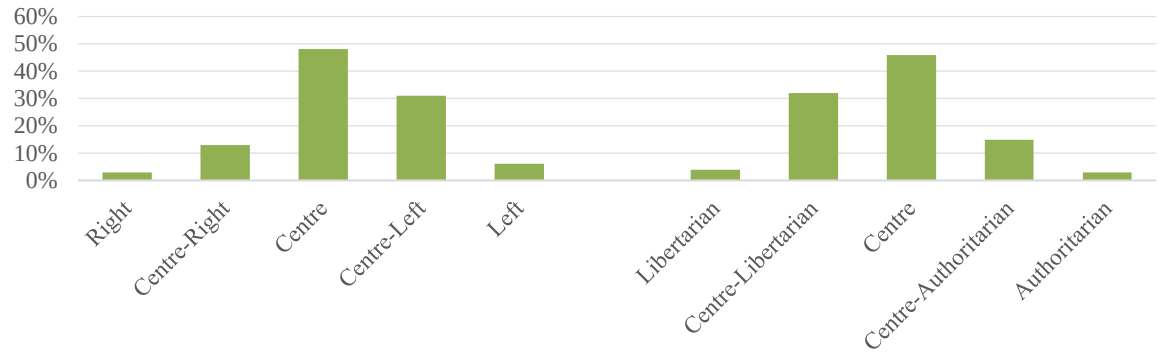

Figure 1 - *Political Orientation Distribution*

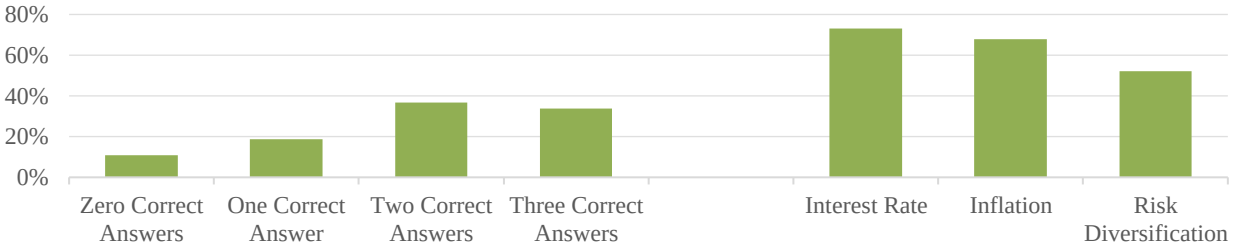

Figure 2 - *Correct Financial Literacy Questions (Number and Type)*

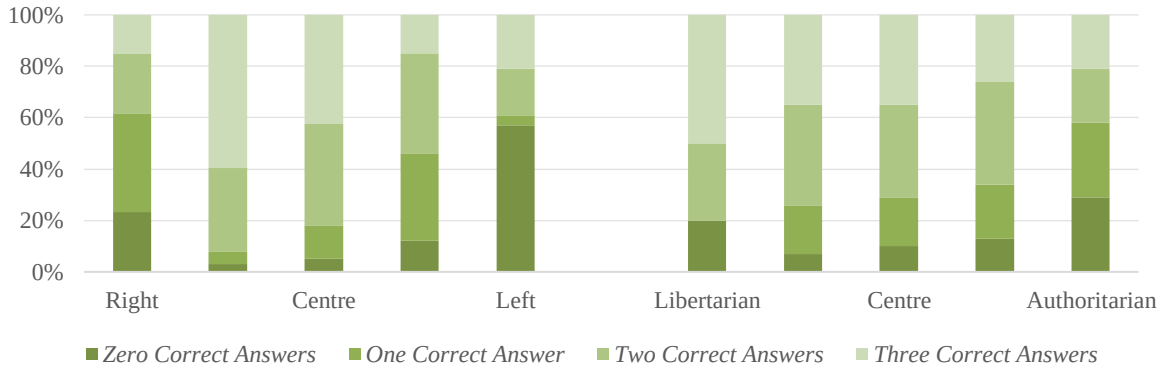

Figure 3 - *Financial Literacy for Political Orientation Category*

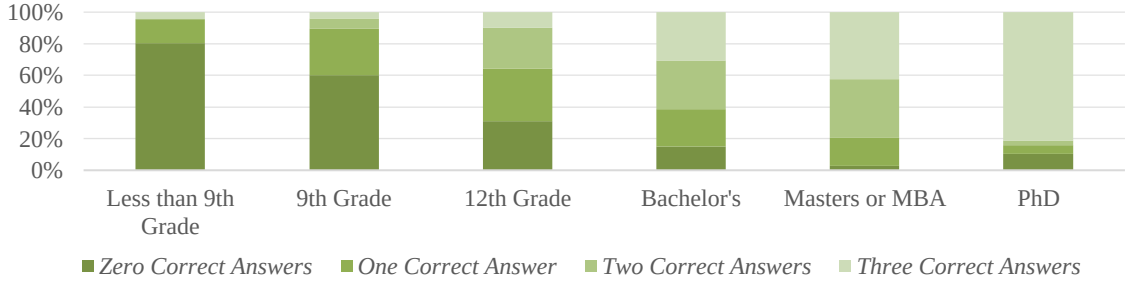

Figure 4 - *Financial Literacy for Highest Education Level*

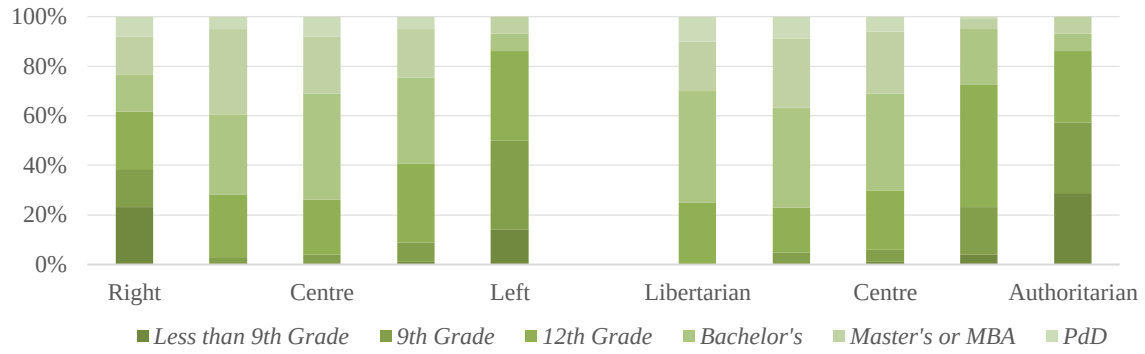

Figure 5 - *Education for Political Orientation Category*

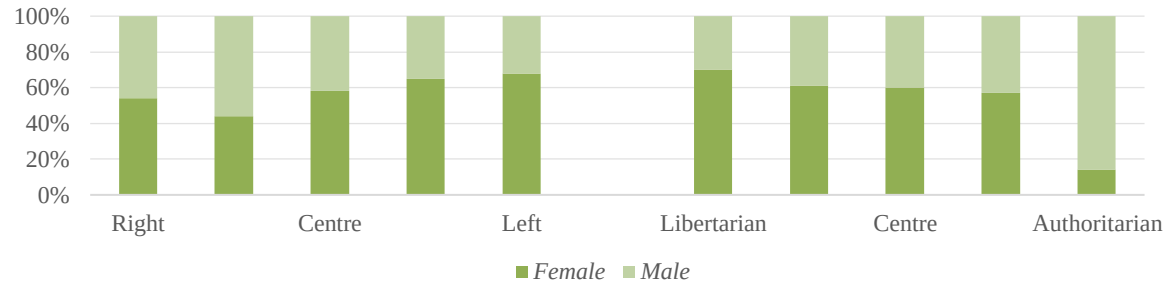

Figure 6 - *Gender for Political Orientation Category*

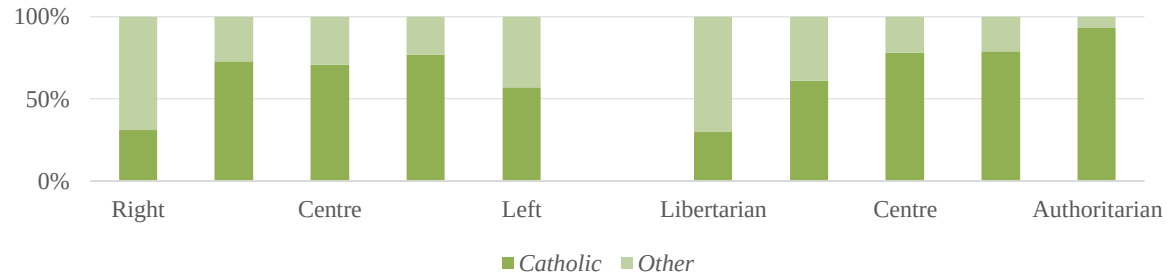

Figure 7 - *Religion for Political Orientation Category*

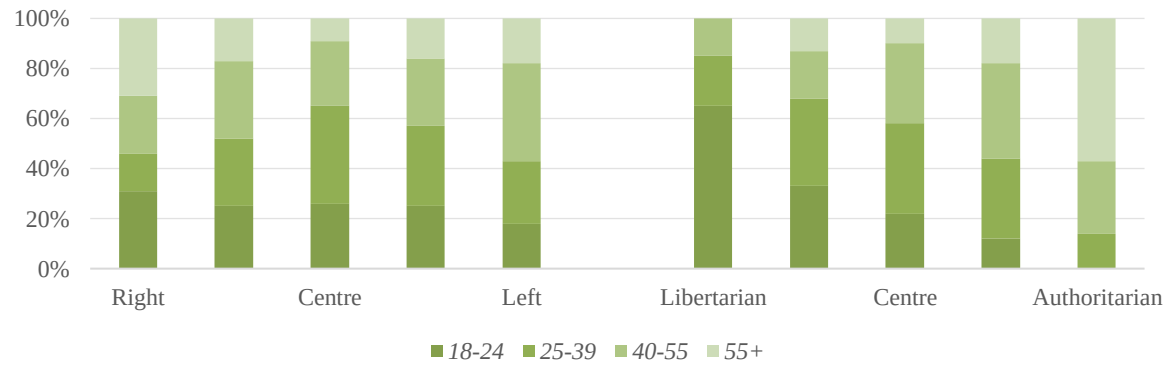

Figure 8 - *Age for Political Orientation Category*

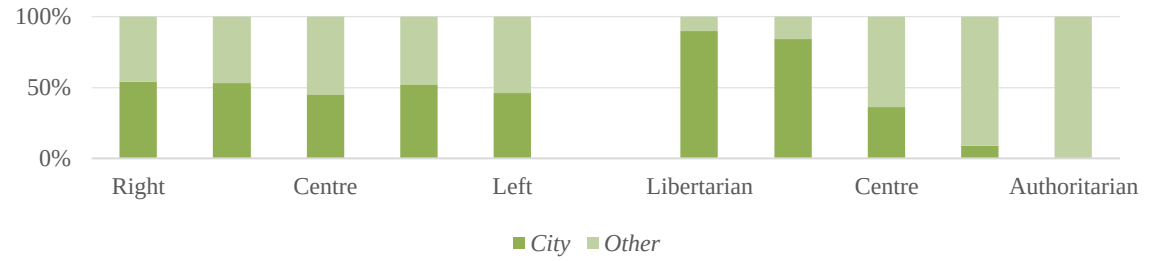

Figure 9 - *Region for Political Orientation Category*

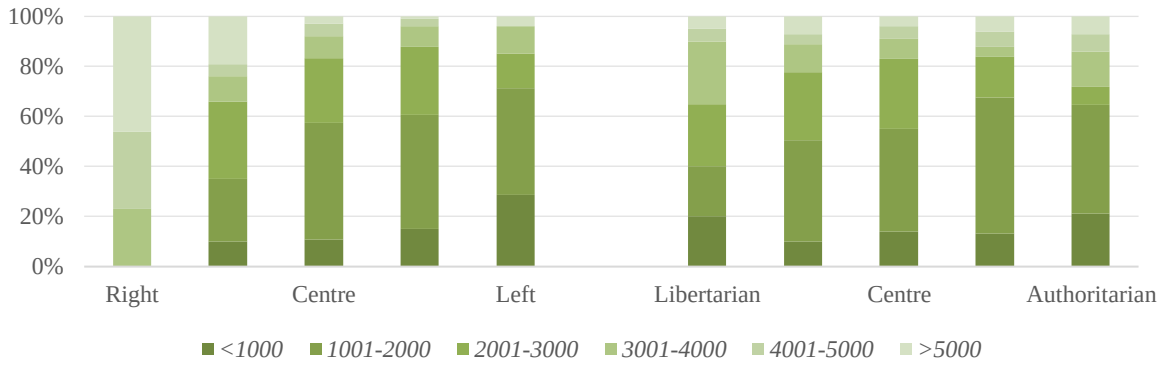

Figure 10 - *Income for Political Orientation Category*

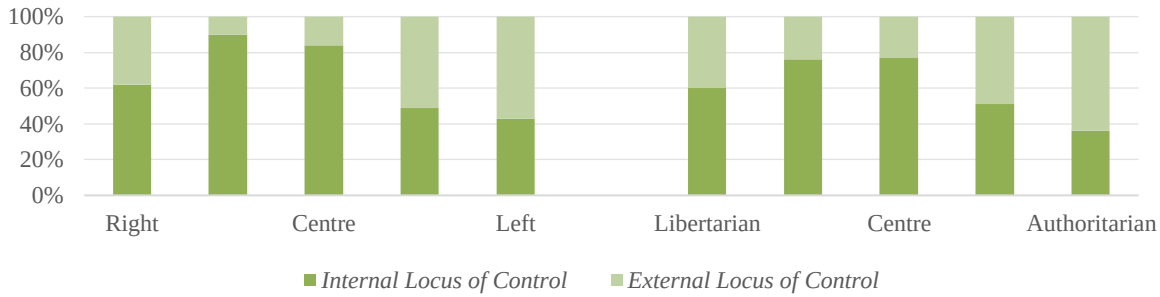

Figure 11 - *Locus of Control for Political Orientation Category*

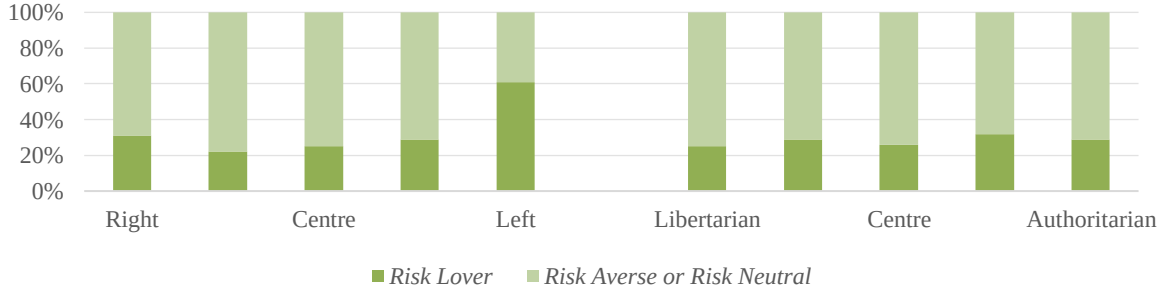

Figure 12 - *Risk Aversion for Political Orientation Category*

8.3. REGRESSION RESULTS

Table 3 – *Political Orientation Models*

	Left-Right Dimension			***Libertarian-Authoritarian Dimension***		
Variables	*Coefficients*	*Std. Err.*	*P > |z|*	*Coefficients*	*Std. Err.*	*P > |z|*
F. Literacy	*-0.344****	*0.065*	*0.000*	*0.122**	*0.065*	*0.062*
Female	*0.186**	*0.108*	*0.086*	*-0.349****	*0.113*	*0.002*
Catholic	*0.043*	*0.127*	*0.738*	*0.482****	*0.133*	*0.000*
25-39	*-0.010*	*0.146*	*0.944*	*0.342***	*0.151*	*0.024*
40-55	*0.217*	*0.160*	*0.176*	*0.385***	*0.166*	*0.020*
+55	*0.112*	*0.185*	*0.547*	*0.703****	*0.194*	*0.000*
City	*0.046*	*0.109*	*0.673*	*- 1.427****	*0.129*	*0.000*
9th Grade	*0.234*	*0.439*	*0.594*	*1.132***	*0.466*	*0.015*
12th Grade	*-0.126*	*0.420*	*0.765*	*-1.783****	*0.455*	*0.000*
Bachelor's	*-0.137*	*0.427*	*0.747*	*-2.170****	*0.465*	*0.000*
Master's or MBA	*-0.110*	*0.436*	*0.800*	*-2.149****	*0.474*	*0.000*
PhD	*0.080*	*0.479*	*0.867*	*-2.497****	*0.518*	*0.000*
1001-2000	*-0.265*	*0.167*	*0.112*	*0.175*	*0.172*	*0.307*
2001-3000	*-0.188*	*0.180*	*0.297*	*-0.105*	*0.186*	*0.571*
3001-4000	*-0.489***	*0.225*	*0.030*	*-0.239*	*0.232*	*0.303*
4001-5000	*-0.941****	*0.284*	*0.001*	*-0.255*	*0.292*	*0.383*
+5000	*-1.591****	*0.272*	*0.000*	*-0.140*	*0.275*	*0.612*
Internal Locus	*-0.790****	*0.123*	*0.000*	*-0.314***	*0.123*	*0.011*
Risk Lover	*0.264***	*0.118*	*0.025*	*-0.183*	*0.121*	*0.133*
Extroversion	*-0.009*	*0.062*	*0.887*	*0.137***	*0.064*	*0.032*
Agreeableness	*0.206***	*0.087*	*0.018*	*0.049*	*0.090*	*0.586*
Conscientiousness	*-0.236****	*0.078*	*0.002*	*0.141**	*0.080*	*0.076*
Neuroticism	*0.040*	*0.058*	*0.489*	*0.077*	*0.060*	*0.197*
Openness	*0.252****	*0.069*	*0.000*	*-0.239****	*0.072*	*0.001*
Log-likelihood		*-484.493*			*-421.592*	
Pseudo R2		*0.164*			*0.272*	
Global LR Test		*0.000****			*0.000****	
Age LR Test		*0.389*			*0.004****	
Income LR Test		*0.000****			*0.165*	
Education LR Test		*0.602*			*0.000****	
RESET Test		*0.147*			*0.058**	

* Significant at a 90% confidence interval (p-value < 0.1)

** Significant at a 95% confidence interval (p-value < 0.05)

*** Significant at a 99% confidence interval (p-value < 0.01)

Table 4 – *Partial Effects*

	Left-Right Dimension					***Libertarian-Authoritarian Dimension***				
Variables	*Right*	*Centre-Right*	*Centre*	*Centre-Left*	*Left*	*Libertarian*	*Centre-Libertarian*	*Centre*	*Centre-Authoritarian*	*Authoritarian*
F. Literacy	*0.007***	*0.053****	*0.065****	*-0.105****	*-0.020****	*-0.002*	*-0.039**	*0.023***	*0.018**	*0.001*
Female	*-0.004*	*-0.029**	*-0.034**	*0.057**	*0.010**	*0.006***	*0.111****	*-0.061****	*-0.054****	*-0.002*
Catholic	*-0.001*	*-0.007*	*-0.008*	*0.013*	*0.002*	*-0.012***	*-0.160****	*0.108****	*0.062****	*0.002**
25-39	*0.000*	*0.002*	*0.002*	*-0.003*	*-0.001*	*-0.006***	*-0.107***	*0.056***	*0.054***	*0.002*
40-55	*-0.004*	*-0.032*	*-0.045*	*0.066*	*0.014*	*-0.006***	*-0.118***	*0.058****	*0.063***	*0.003*
+55	*-0.002*	*-0.016*	*-0.023*	*0.034*	*0.007*	*-0.008****	*-0.192****	*0.051***	*0.140****	*0.008*
City	*-0.001*	*-0.007*	*-0.009*	*0.014*	*0.003*	*0.039****	*0.424****	*-0.238****	*-0.214****	*-0.012***
9th Grade	*-0.004*	*-0.032*	*-0.052*	*0.072*	*0.016*	*0.071*	*0.357****	*-0.340***	*-0.086****	*-0.002**
12th Grade	*0.003*	*0.020*	*0.022*	*-0.038*	*-0.007*	*0.121**	*0.502****	*-0.450****	*-0.167****	*-0.006**
Bachelors	*0.003*	*0.022*	*0.025*	*-0.042*	*-0.008*	*0.135**	*0.571****	*-0.435****	*-0.255****	*-0.015**
Master's or MBA	*0.003*	*0.018*	*0.019*	*-0.034*	*-0.006*	*0.206**	*0.511****	*-0.537****	*-0.173****	*-0.007**
PhD	*-0.002*	*-0.012*	*-0.016*	*0.025*	*0.005*	*0.442***	*0.283**	*-0.617****	*-0.105****	*-0.003**
1001-2000	*0.006*	*0.042*	*0.047*	*-0.080*	*-0.015*	*-0.003*	*-0.056*	*0.032*	*0.026*	*0.001*
2001-3000	*0.005*	*0.030*	*0.032*	*-0.057*	*-0.010*	*0.002*	*0.034*	*-0.021*	*-0.015*	*-0.001*
3001-4000	*0.017*	*0.091**	*0.051****	*-0.139***	*-0.019****	*0.006*	*0.080*	*-0.054*	*-0.031*	*-0.001*
4001-5000	*0.057*	*0.201****	*-0.000*	*-0.232****	*-0.025****	*0.006*	*0.086*	*-0.059*	*-0.032*	*-0.001*
+5000	*0.172***	*0.329****	*-0.163**	*-0.309****	*-0.030****	*0.003*	*0.046*	*-0.030*	*-0.019*	*-0.001*
Internal Locus	*0.013****	*0.100****	*0.184****	*-0.231****	*-0.066****	*0.005***	*0.098****	*-0.051****	*-0.050***	*-0.002*
Risk Lover	*-0.006***	*-0.041***	*-0.050***	*0.081***	*0.015***	*0.003*	*0.0589*	*-0.035*	*-0.027*	*-0.001*
Extroversion	*0.000*	*0.001*	*0.002*	*-0.003*	*-0.001*	*-0.003**	*-0.0443*	*0.026***	*0.020***	*0.001*
Agreeableness	*-0.004**	*-0.032***	*-0.039***	*0.063***	*0.012***	*-0.001*	*-0.0158*	*0.009*	*0.007*	*0.000*
Conscientiousness	*0.005***	*0.036****	*0.045****	*-0.072****	*-0.014***	*-0.003*	*-0.0455**	*0.027**	*0.021**	*0.001*
Neuroticism	*-0.001*	*-0.006*	*-0.008*	*0.012*	*0.002*	*-0.001*	*-0.0248*	*0.015*	*0.011*	*0.000*
Openness	*-0.005***	*-0.039****	*-0.047****	*0.077****	*0.015****	*0.004**	*0.0770****	*-0.045****	*-0.035****	*-0.001**

* Significant at a 90% confidence interval (p-value < 0.1)

** Significant at a 95% confidence interval (p-value < 0.05)

*** Significant at a 99% confidence interval (p-value < 0.01)