



# **The unexplained paradox of Latin America**

A multilevel regression analysis of the impact of income and income inequality on support for wealth redistribution in Latin American countries over the period of 1990 to 2014

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## **Abstract**

Latin America faces high and persistent levels of economic inequality. These persistent levels of inequality have profound consequences for its societies. Economic inequality can be decreased by wealth redistribution policies. Nonetheless, actual redistribution remains behind in the Latin American region. By using multilevel regression analysis, I have investigated this unexplained paradox of Latin America. This research focuses on the relationship between income and income inequality and support for wealth redistribution. The analysis shows that the self-interest theory is very important in explaining individual's support for wealth redistribution, as people with a higher income have lower support for wealth redistribution. Moreover, if income inequality increases, this relationship between income and support for wealth redistribution becomes stronger. This suggests that individuals are self-interested human beings, who will do what is financially best for them. However, by using different theories, I demonstrated that this effect of self-interest works differently for different sub-groups. Individuals with post-material values are less affected by their income-level. This supports the explanatory value of the cultural theory. Moreover, young individuals and individuals with high levels of education have positive expectations of the future, which also makes them less affected by their current income-level. This indicates the importance of the social mobility theory. Surprisingly, people with high levels of political trust are more touched by the effect of income on support for wealth redistribution. More research on the principal-agent theory of trust is therefore needed. By connecting these different theories, important steps are made in solving the unexplained paradox of Latin America.

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## **Chapter 1: Introduction**

### **1.1 Introduction**

Latin America faces a high and persistent level of economic inequality and is named as the region with the highest inequality in the world (De Ferranti et al., 2004; Gasparini & Lustig, 2011). The income inequality is characterized by a large concentration of income at the top of the total distribution of income, as around 40 percent of the total income in most countries is received by only the richest ten percent of citizens (ibid.). This percentage is significantly higher compared with other countries with high income differences, such as the United States (ibid.). Although the 2000s were a successful decade with economic growth and reductions in income inequality, one in four people in Latin America is still poor (Vakis et al., 2016). These high levels economic inequality have profound consequences for Latin American societies. Numerous publications demonstrated that a higher level of income inequality decreases overall happiness (Oishi & Kesebir, 2015), increases violent crime rates and the number of murders (Elgar & Aitken, 2011; Fajnzylber et al., 2002), and lowers the levels of physical health life expectancy (De Vogli et al., 2005). Moreover, high inequality influences nearly all aspects of life in Latin American societies, it reduces aggregate economic growth and it results in an unreliable legal system (De Ferranti et al., 2004). Furthermore, Latin American citizens associate inequality with persistent unfairness (Graham & Felton, 2006).

In this research, I will focus on an important government instrument to reduce these high levels of economic inequality: wealth redistribution policies. These governmental policies redistribute wealth from the rich part of society to the poor (Krawczyk, 2010), and can thereby influence allocative efficiency and reduce inequality (Bardhan et al., 1999). Wealth redistribution policies are therefore a vital tool to reduce the persistent levels of inequality in Latin America (De Ferranti et al., 2004). Individual support for wealth redistribution, however, remains a conflictual issue (Acemoglu & Robinson, 2006, p. 63; Fong, 2001). Based on the high amount of people with low incomes and the persistent level of high economic inequality in Latin America, one would expect a high level of support for wealth redistribution<sup>1</sup>. However, in reality, there are contradictory results about the individual support for wealth redistribution among citizens (see for example Gaviria, 2007; Graham & Felton, 2006), and the actual redistribution remains behind (Gaviria, 2007; Luebker, 2014). It appears that actual redistribution is limited and the question remains if Latin Americans support wealth redistribution policies. This unexplained paradox will be the focus of this research, as I will explain what influences the relationship between income and income inequality on wealth redistribution. More specifically, I will research to what extent different middle-range theories explain the impact of income and income inequality on individual support for wealth redistribution.

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<sup>1</sup> See for example for income Kam & Nam (2008) or Owens & Pedulla (2014) and for income inequality Meltzer & Richard (1981; 1983).

To explain differences in support for wealth redistribution, two theories are mainly used in the literature. The first theory is the *self-interest theory*, which outlines that individual behaviour is purely driven by financial self-interest (Barbalet, 2012). People are assumed to be rational human beings who want to maximize their utility (Becker, 1976). Therefore, individuals are expected to support wealth redistribution if this gives them the greatest financial benefits. The second theory is *the social mobility theory*. This theory outlines that future prospects of social mobility should be taken into account (Bénabou & Ok, 2001). Rational individuals with a low income will oppose wealth redistribution policies, if they believe that they will earn more in the future (ibid.). However, these two theories are not explaining the paradox of Latin America sufficiently. Therefore, I also include the cultural theory and the principal-agent theory of trust in the theoretical framework. The *cultural theory* outlines that values and beliefs are key in forming an individual's support for wealth redistribution (Edgar & Sedgwick, 2008; Smith, 2001). According to this theory, individual's support for wealth redistribution is formed by deeply-rooted values and beliefs. There is empirical research on this theory, however significantly less compared with the self-interest and social mobility theory. The *principal-agent theory of trust* focuses on the consequences of asymmetric information. In these situations, an individual's trust in the government is important in deciding its support for wealth redistribution (Hindmoor, 2006, p. 42). By using this theory, I am able to incorporate political trust in the analysis. To my knowledge, this theory is not previously used in research on support for wealth redistribution.

## **1.2 Scientific relevance**

It is valuable to research wealth redistribution in the aforementioned fashion, as it has three important theoretical contributions. First, research on this topic normally focuses on one theory to explain differences in support for wealth redistribution. In most research, the focus is only on the impact of the self-interest theory (see for example Luebker, 2014; Owens & Pedulla, 2014) or the social mobility theory (see for example Alesina & La Ferrara, 2005; Bénabou & Ok, 2001). In this thesis, I will not only use more theories to explain the paradox in Latin America, but I will also make an important theoretical contribution by developing a theoretical synthesis of the four different theories. More specifically, I will explain the need to classify these middle-range theories under the overarching rational choice approach. This theoretical approach is needed to demonstrate how the theories relate to each other and which theoretical explanation works under certain circumstances.

Second, I will contribute to the research field by explaining how the different theories interact with each other and how theoretical mechanisms reinforce each other. Normally, research on support for wealth redistribution focuses on one particular theory and only controls for additional theoretical explanations. I will take this a step further by researching how different theoretical explanations interact with each other, instead of analysing their impact separately. This important nuance offers the possibility to not only focus on the average relationship between income and income inequality and support for wealth redistribution, but instead on how this relationship changes for particular groups.

Third, it is crucial to place the principal-agent theory of trust in the overarching theoretical framework. This theory outlines the importance of political trust, which can be an important theoretical explanation considering the authoritarian and military regimes during the last century in Latin America (Zmerli & Castillo, 2015). It is therefore needed to include this theory in the framework, as it can potentially explain the paradox of wealth redistribution in Latin America. However, the relationship between political and economic factors is not often researched (Córdova & Seligson, 2009), and therefore political trust is often neglected in research on support for wealth redistribution. By using the principal-agent theory of trust, I will provide a theoretical link to connect political trust to explain support for wealth redistribution. This is an important theoretical contribution in the research field, as the theoretical place of political trust in the overarching theoretical framework to explain support for wealth redistribution is not earlier discussed in the literature<sup>2</sup>.

To test the theoretical contributions of this research, a strong methodological analysis is needed. By using a multilevel approach, I will be able to research whether country characteristics, such as the national level of income inequality, have an effect on individual characteristics, such as individual support for wealth redistribution (Hox, 2002, p. 3). Moreover, this provides insights into the interactions between both country- and individual-level characteristics. This can take research on support for wealth redistribution a step further, as this approach not often used in research on support for wealth redistribution (see for example Fong, 2001).

Finally, it is especially important to make the theoretical and methodological contributions with data for Latin America. In previous research on support for wealth redistribution, the focus mainly was on the United States and European countries (see for example Alesina & Glaeser, 2004; Kam & Nam, 2008; Meltzer & Richard, 1981). I will instead focus on Latin America, which is an often neglected, but highly relevant region to research. This is because wealth redistribution in this region is very limited (Luebker, 2014), while the level of income inequality is among the highest in the world (De Ferranti et al., 2004). Moreover, there are contradictory results to what extent Latin American citizens support wealth redistribution policies (see for example Gaviria, 2007; Graham & Felton, 2006). In this research, this unsolved paradox will be no longer ignored, but extensively analysed.

### **1.3 Research question**

In this research, the relationship between income and income inequality and support for wealth redistribution will be explained. In order to have a better insight on this relationship in Latin American countries over time, it is first of all important to investigate how support for wealth redistribution varies between Latin American countries. Therefore, the first research is descriptive and is as follows:

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<sup>2</sup> See for example Berens and von Schiller (2017) or Edlund (1999), who discuss political trust without placing it in a broader theoretical framework.

*How does support for wealth redistribution vary across and within Latin American countries in the period of 1990-2014?*

Subsequently, I will research how the relationship between income and income inequality and support for wealth redistribution varies between Latin American countries, leading to the second descriptive research question:

*How does the relationship between income and income inequality and support for wealth redistribution vary across and within Latin American countries in the period of 1990-2014?*

Finally, and most importantly, I will look at the explanatory value of four middle-range theories on the impact of income and income inequality on support for wealth redistribution. The final, third research question is therefore explanatory and as follows:

*To what extent can the relationship between income and income inequality and support for wealth redistribution be explained by the self-interest theory, the social mobility theory, the cultural theory, and the principal-agent theory of trust in Latin American countries in the period of 1990-2014?*

### **1.3 Societal relevance**

This research has important societal relevance. Income inequality has profound effects on Latin American citizens. High inequality has strong societal effects, as it affects access to education, health and public services, political abilities and influence, the functioning of credit and labour markets, and access to land and other assets (De Ferranti et al., 2004). Furthermore, high inequality negatively affects the aggregate economic growth and results in an unreliable legal system (ibid.). Moreover, the inequality drives the dissatisfaction of citizens, which became clear with a recent wave of protests (Nelissen, 2019).

Since wealth redistribution is a policy instrument to reduce this high level of inequality, it is important to gain more insights on how this inequality actually impacts individual support for wealth redistribution. This question on wealth redistribution is especially important for Latin American societies, given the high levels of inequality in the whole region. In more unequal societies, there should be a more detailed understanding of this inequality (Gaviria, 2007). This understanding could provide important insights to policymakers who are concerned with wealth redistribution policies.

### **1.5 Methods**

This thesis is a quantitative study. More specifically, a multilevel regression analysis of citizens across Latin American countries will be conducted. Data will be analysed over a 24-year period from 1990 to 2014. The dataset consists of a combination of existing datasets that measure individual characteristics and country-specific characteristics. I will use, among other analyses, multilevel regression analysis,

because of the use of nested data. By using this research method, relevant micro-level effects and cross-level interaction effects of country-specific characteristics can both be properly estimated.

## **1.6 Structure**

Firstly, in Chapter 2, the theoretical framework and hypotheses will be presented. Subsequently, in Chapter 3, the research approach will be presented, the data that is used will be described and the methodology used to test the hypotheses will be discussed. In Chapter 4, the statistical analyses will be presented. Finally, in Chapter 5, a conclusion will provide an answer to the research questions. Moreover, the discussion section will connect the results of this thesis with the theoretical framework of Chapter 2, and limitations and recommendations for future research will be discussed.

## **Chapter 2: Theoretical Framework**

In this chapter, I will first define support for wealth redistribution. Subsequently, I will present a literature review, which will be structured around the different middle-range theories. These theories will be further explained after the literature review, by providing a synthesis between the middle-range theories. The rational choice approach will be used to develop this theoretical synthesis. I will demonstrate how the different theories can all be seen as part or extension of the rational choice approach, and subsequently hypotheses will be formulated.

### **2.1 Conceptualization of support for wealth redistribution**

It is important to know what ‘support for wealth redistribution’ means. Based on earlier definitions used by others, I will present my own definition and conceptualization of support for wealth redistribution.

An economic definition of wealth distribution is provided by Düring et al. (2008). According to Düring et al. (2008), wealth redistribution refers to the relative amount of wealthy people at a certain point in time. To measure wealth distribution, the Gini-coefficient is often used in economics. This index measures the breadth of wealth redistribution and thereby indicates how unequal incomes are distributed in a country (Acemoglu & Robinson, 2006, p. 59). Generally speaking, if the Gini-coefficient gets a higher value, this corresponds with more inequality. The total wealth of a country is then concentrated in the hands of a few rich people (ibid.). In this thesis, I will follow these ideas and define wealth distribution as *the relative distribution of wealth of members of a society*.

Now that we know what is meant by wealth distribution, I can formulate a definition of wealth redistribution policies. Redistribution of wealth changes the Gini-coefficient, as it increases the wealth of the poor, while reducing the wealth of the rich people (Deaton, 2002). This redistribution of wealth is done by wealth redistribution policies: policies that transfer money from the rich part of society to the poor (Krawczyk, 2010). Wealth redistribution policies can thus be defined as governmental policies that redistribute wealth from the rich part to the poor part of society (Alesina & Glaeser, p. 1). These policies are aimed at reducing income inequality in a country (Luebker, 2014). The most well-known example of wealth redistribution policies is progressive taxation (Alesina & Glaeser, 2004, p. 2). Countries differ in the extent to which they use these policies to take wealth from the rich to give it to the poor part of society (ibid., p. 15). Considering these aspects of wealth redistribution policies, I will define wealth redistribution policies as *governmental policies aimed to redistribute wealth from the rich to the poor*.

Building on the previous definitions, I can define the support for wealth redistribution. Decisions about how taxation should be organized remain controversial, as people have different opinions about wealth redistribution policies (Berens & von Schiller, 2017). This means that the support for wealth redistribution differs between individuals. Some people are in favour of redistribution policies, while others oppose these policies. I will therefore define the support for wealth redistribution as *the extent to*

*which an individual supports wealth redistribution policies aimed to redistribute wealth from the rich to the poor.*

## **2.2 Literature review**

The literature review will give an overview of previous empirical research on support for wealth redistribution. To structure this literature review, I will use the common middle-range theories combined with additional theories to explain support for wealth redistribution: 1) the self-interest theory, 2) the social mobility theory, 3) the cultural theory and 4) the principal-agent theory of trust. Please note that most empirical research did not focus on Latin America, as this region is often neglected in research on support for wealth redistribution.

### **2.2.1 Self-interest theory**

According to the self-interest theory, people are assumed to be self-interested, rational individuals (Barbalet, 2012). Therefore, people are expected to support welfare redistribution policies if this benefits their own wealth. The upcoming paragraphs will discuss empirical research on the self-interest theory.

First of all, an individual's *income* is important in explaining differences in support for wealth redistribution. Alesina and Gleaser (2004) posit that relatively rich people are less supportive of wealth distribution than relatively poor people, as these policies transfer wealth from the rich to the poor. This is also empirically concluded by Owens and Pedulla (2014), who demonstrate that a reduction in income and higher unemployment lead to a higher support for wealth redistribution. These results are based on an individual-level fixed-effects model. Since their panel data consists of data before, during, and after the financial crisis of 2008, they had enough information on people who experienced income shocks. The results indicate that support for wealth redistribution is malleable and not fixed: individuals have a higher support for redistribution when they experienced a loss in their own income (Owens & Pedulla, 2014). These welfare fluctuations are more important than deeply rooted ideological commitments (*ibid.*). These results are supported by Kam and Nam (2008), who analysed individual-level data combined with state-level macroeconomic indicators. They find that in economic hard-times characterized by rising inflation, people are more supportive of welfare redistribution, because of self-interested concerns. Economic downturns reduce individuals' net-income, which makes them call for increased redistribution policies (Kam & Nam, 2008). This indicates that macroeconomic policies influence public opinions on wealth redistribution (*ibid.*).

The argument of self-interest is not limited to economic tough-times only. Other research argued that people can be expected to be more supportive of redistribution during economic good-times, because in these circumstances their own material well-being is not threatened (Orr, 1976). This permits people to focus on other objects of self-interest (Durr, 1993). Durr (1993) thereby argues that changing economic expectations change the support for redistribution. Although Durr (1993) only researched

changed *expectations* and not changed actual income, this research does demonstrate that there are also arguments for support for contraction of wealth redistribution in economic tough times and expansion of wealth redistribution in times of prosperity.

Second, research using the self-interest theory focuses on *income inequality*. When incomes are distributed more unevenly, poverty will generally be seen as more critical and severe (Kanbur, 2005). National income can be very high, but if there is also a high level of income inequality, there is still a high level of poverty (White, 2001). The general relationship between inequality and wealth redistribution was formulated by Meltzer and Richard (1981). They developed an economic model to argue that, on the one hand, people with an income above the median income are opposed to taxation, and in particular against progressive taxation. On the other hand, voters with an income below the median income are in favour of higher taxes and redistribution of income (Meltzer & Richard, 1981). The decisive voter, i.e. “the voter with fifty percent of the others above and below him on the ability and income ladders” (Alesina & Glaeser, 2004, p. 57), chooses the tax share. When the mean income rises relative to the income of the decisive voter, so will taxes (Meltzer & Richard, 1981). Higher inequality should therefore be translated in more wealth redistribution (*ibid.*). The proposition of Meltzer and Richard (1981) is now widely known as the Meltzer-Richard hypothesis (Luebker, 2014). Meltzer and Richard (1983) empirically tested their developed hypothesis using longitudinal country-level data for the United States. They indeed found that the share of income redistributed increased, when the number of voters who benefitted from redistribution increased. The more unequal the pre-tax distribution of income is, the higher is the support and pressure for wealth redistribution (Alesina & Glaeser, 2004, p. 55). However, this conclusion is based on democracies under, theoretically speaking, majority rule (Meltzer & Richard, 1981). Since this majority rule is not used in all democratic countries, one can question the generalizability of the Meltzer-Richard hypotheses.

Later research on the Meltzer-Richard hypothesis reveals that the outcome highly depends on how ‘redistribution’ is defined and operationalized (Luebker, 2014). Some papers researched the ‘absolute redistribution’ by operationalizing wealth redistribution with the absolute reduction in the Gini coefficient. This operationalization leads to the conclusion that high inequality is correlated with higher levels of wealth redistribution (see for example Kenworthy & Pontusson, 2005). However, other papers focused on the ‘relative redistribution’, by looking at the relative reduction of the Gini coefficient. Using this operationalization generally leads to the conclusion that unequal societies do not redistribute more (see for example De Mello & Tiongson, 2006). Luebker (2014) tries to solve this operationalization problem by measuring relative redistribution as “a direct function of the initial level of inequality for private sector incomes” (Luebker, 2014, p. 138). He uses this operationalization to test, with a dataset containing repeated observations across countries, whether inequality leads to more wealth redistribution. The results indicate that income inequality alone is not sufficient to explain individual support for wealth redistribution (Luebker, 2014). This is also concluded by Alesina and Glaeser (2004, p. 56), who conclude that the Meltzer-Richard hypothesis does not hold for Europe and the United

States. They argue that the before-tax inequality measurement fails, due to three reasons: 1) the poor may not have enough influence to extract wealth from the rich with redistribution policies, 2) countries can have different ways to redistribute income and this complexity is lost when only one measurement is used and 3) the Gini-coefficient is a poor indicator, as other policies can also impact the inequality in a country (ibid., p. 59). However, this conclusion did not include Latin American countries, as these countries were not investigated. Nevertheless, one can conclude that a better operationalization of income inequality is needed to reach reliable and valid conclusions on the Meltzer-Richard hypothesis.

### **2.2.2 Social mobility theory**

The social mobility theory outlines that support for wealth redistribution is not only based on current income and inequality, but also on the lifetime income potential of an individual (Alesina & Glaeser, p. 56). This means that the degree and nature of income mobility should be considered when analysing preferences for redistribution (ibid.). Using this theory to explain support for wealth redistribution, one can assume that individuals support wealth redistribution policies more if they are not expecting prospects of upward mobility in the future.

To test the social mobility theory empirically, Bénabou and Ok (2001) modify the basic model of Meltzer and Richard (1981). They do this by including income mobility and future income prospects in their model. This model shows that there are indeed individuals who earn less than the median voter and who oppose redistribution if they expect to earn more in the future (Bénabou & Ok, 2001). Their demand for redistribution will be lower if the time for which the taxes are determined is longer, or when they expect to keep on earning more in the future (ibid.). Bénabou and Ok's (2001) theoretical model is empirically tested by Alesina and La Ferrara (2005), who use individual data to measure individual support for wealth redistribution. They indeed find that American citizens consider future income prospects when forming their own opinion on wealth redistribution policies. More specifically, an individual's support for wealth redistribution will be lower, if an individual expects higher income in the future and if he/she is more likely to be in the upper deciles of the income distribution over the next upcoming years (Alesina & La Ferrara, 2005). Gaviria (2007) researched the social mobility effect in Latin America by using a survey of public opinion held in seventeen countries. The results show that Latin American citizens are not optimistic about their own mobility experiences (Gaviria, 2007). These characteristics are correlated with individual's political preferences, as support and demand for redistribution is higher among people who did not experience social mobility and do not believe they can climb up the income ladder in the future (ibid.).

Moreover, there are important individual characteristics that affect the prospect of social mobility. For example, educational attainment is highly important. Blanden et al. (2004) find that an increase in generational income mobility of children is associated with an increase in the educational attainment of young people. This conclusion is based on comparing estimates of income mobility over time in Britain (Blanden et al., 2004). The fact that highly educated people are less supportive of wealth

redistribution is sensible, as they are expected to earn more in the future. Furthermore, increased education is associated with lower lifetime unemployment, higher status and a longer work life (Card et al., 2018). However, children from higher income parents benefitted to a greater extent from this extra educational attainment (Blanden et al., 2004). Nevertheless, this research demonstrates that education in any case leads to higher social mobility (ibid.). These results are also supported by Cojocaru (2014), who connects education with support for wealth redistribution. He demonstrates, by using individual data to run regression analysis, that less educated people have stronger preferences for wealth redistribution policies.

Besides educational attainment, age also seems to be an important factor that determines individual's prospect of upward mobility in the future. Cojocaru (2014) demonstrates that younger people have less support for wealth redistribution policies. This is because younger people will, generally speaking, be more optimistic about prospects for social mobility, as upward mobility is seen as a natural progress in their career (Cojocaru, 2004). He therefore concludes that individual characteristics partly define support for wealth redistribution. More concretely, high expectations of upward mobility reduce support for wealth redistribution, however only if individuals have a low degree of risk aversion (ibid.). This degree of risk aversion is, in turn, influenced by, among others, educational attainment and age (ibid.).

### **2.2.3 Cultural theory**

Cultural theory focuses on the activities, beliefs and customs of individuals or groups to understand how this shapes their behaviour. These beliefs and values are assumed to produce the actions of individuals. Hence, it is expected that the deeply-rooted values and beliefs of an individual shape their support for wealth redistribution. The following paragraphs will discuss empirical research on the cultural theory.

In essence, cultural theory outlines that *values* explain people's choices (Luebker, 2014). If something is valued, it means that worth is ascribed to it, and that it is placed within some hierarchy (Edgar & Sedgwick, 2008, p. 375). Feldman (1988) empirically investigates, by using factor analysis, how core beliefs and values influence the political opinions of individuals. He argues that policies are seen as right or wrong based on individual's deeply held values, thereby demonstrating that beliefs and values can explain some differences in people's preferences.

Several studies have used the proposition of Feldman (1988) to investigate the relationship between having certain values and support for wealth redistribution. For example, the relationship between self-determination beliefs and support for wealth redistribution is often analysed. Self-determination means that outcomes are determined within individual control, while exogenous-determination means that outcomes are determined beyond individual control (Fong, 2001). Fong (2001) uses social survey data to empirically test the impact of these self-determination beliefs on support for wealth redistribution. Her results demonstrate that these beliefs are very strong predictors of support for wealth redistribution. These results hold both in the high-income and low-income samples and cannot

be explained with tax-cost concerns (*ibid.*). Furthermore, Alesina and Glaeser (2004) argue that, generally speaking, Europeans have exogenous-determination beliefs, while Americans have self-determination beliefs. Americans believe, in line with the American Dream, that poor people are not trapped in their situation and that effort can actually change their situation. These views are correlated with the political outcomes of these countries (*ibid.*, p. 184). This indicates a strong relationship between exogenous-determination beliefs and more support for wealth redistribution policies and vice versa (*ibid.*). Alesina and Angeletos (2005) conclude the same by developing a non-overlapping generational model. If a society has self-determination beliefs, it will support low redistribution and low taxes (*ibid.*). If instead a society has exogenous-determination beliefs, it will support wealth redistribution policies and tax a lot (*ibid.*). However, the question remains whether these beliefs are a cause or an effect of the welfare state. Alesina and Glaeser (2004, p. 185) argue that the latter explanation holds: self-determination beliefs are shaped by politics and indoctrination. This claim is also supported by Alesina and Angeletos (2005), who argue that higher taxes will make people more dependent on redistribution policies, thereby making higher redistribution more attractive.

Other research focused on egalitarian and humanitarian values. Kam and Nam (2008) expect that people with egalitarian values will be more supportive of more social welfare spending. Their results indeed demonstrate that having egalitarian values is a strong predictor for support for welfare redistribution. Furthermore, Feldman and Steenbergen (2001) focus on both egalitarian and humanitarian values. The latter can be defined as “the belief that people have responsibilities toward their fellow human beings and should come to the assistance of others in need” (Feldman & Steenbergen, 2001, p. 659). They conclude that egalitarians support policies that ask for a stronger economic role for the government, while humanitarians are in favour of more modest policies that focus on addressing the problems for the ones in need. However, although the support for welfare policies may be based on humanitarianism, this support is only qualified by the beliefs an individual has about its government (*ibid.*). Feldman and Steenbergen’s (2001) conclusions are reached by holding telephone interviews in the United States, which does raise some questions about the generalizability of the results.

The above described values can be categorized under the main distinction between materialist versus post-materialist values. Materialists focus on economic and physical security, while post-materialists focus on self-expression and quality of life (Inglehart, 1977, Inglehart et al., 1998). While the central value of materialists is individual economic achievement, post-materialists emphasizes the quality of life (Inglehart et al., 1998, p. 10). This is based on the idea that individuals start caring about non-material needs, once their most basic material needs are fulfilled (Inglehart, 1977). Therefore, whether an individual has materialist or post-materialist values is based on his socioeconomic environment, as value is attached to those things that are in short supply (*ibid.*). These value priorities are based on the individual’s formative years and tend to stay relatively stable throughout a lifetime (*ibid.*) Since post-materialists prioritize non-material values, such as altruism and egalitarianism, they are more concerned about the well-being of those in need (*ibid.*). Therefore, one could expect that post-

materialists are supporting wealth redistribution policies more than materialists. This hypothesis is confirmed by Erickson and Laycock (2002). They find that a high level of post-materialist values is correlated with a strong commitment to redistributive policies. This conclusion is reached by using survey-data from Canadian citizens from 1997 (Erickson & Laycock, 2002). Janmaat and Braun (2009) reach the same conclusion. They find a positive relationship between post-materialism and social solidarity. However, they question if having post-materialist values leads to deep and lasting support for welfare policies. Their conclusion is based on analysing trends and conducting cross-sectional analyses at both the micro- and macro-level for 29 European countries.

#### **2.2.4 Principal-agent theory of trust**

The principal-agent theory of trust posits that principal-agent relationships cause principal-agent problems (Hindmoor, 2006, p. 134). Problems arise because individuals (principals) cannot know with absolute certainty what the government (agent) will do with their money. Due to this asymmetric information, the trust that people have in the government becomes important. The following paragraphs entail empirical information on *political trust*.

Since a government cannot force its high-income earners to pay increasing taxes, it needs to convince these citizens that paying taxes is a good investment in the public system (Berens & von Schiller, 2017). This is especially the case for developing countries, where progressive taxes cannot be properly implemented if high-income taxpayers oppose this (ibid.). This phenomenon is clearly illustrated by Ardanaz and Scartascini (2013), who argue that in more unequal countries, like Latin America, the elite decreased their tax burdens by either tax evasion or controlling the legislative process. They conclude this by investigating more than 50 countries in cross-sectional time-series analysis. Based on this research, Berens and von Schiller (2017) argue that trust in political institutions is decisive for Latin American countries. If the level of political trust is higher, high-income earners expect that their paid contributions will be used in a good way, which makes them more supportive of income taxation (Berens & von Schiller, 2017). This hypothesis is empirically tested, using regression analysis, with data of Latin American countries. The results also apply to poor people, as their level of institutional trust also is negatively related with the support for progressive income taxation (ibid.). Although Berens and von Schiller (2017) do not specifically focus on wealth redistribution policies, their research demonstrates that the reliability of the government plays an important role in the acceptance of more progressive taxation. Only if individuals trust that their contributions will be used in the right way, they believe they can also benefit from taxation.

In line with this argumentation, Korpi and Palme (1998) argue, by comparing OECD countries, that people with a high-income accept income redistribution policies as long as these citizens believe that they also benefit from the provided public goods. If self-interested high-income earners believe that the public goods provided by the state will also benefit them, even though they are rich, they will easier accept progressive taxation (ibid.). The fact that support from the high-income earners is needed is called

*the paradox of redistribution* by Korpi and Palme (1998). This paradox indicates that targeting benefits at the poor only and a higher concern for creating equality via equal public transfers will in fact increase poverty and inequality (Korpi & Palme, 1998). Instead, the support of the high-income earners is needed, and this support increases if the level of political trust increases (Berens & von Schiller, 2017). However, Edlund (1999) demonstrates that differences regarding the attitudes towards redistribution and confidence in the state did not lead to different patterns regarding cheating with taxes and benefits. This conclusion is, however, based on using individual data of only two countries: Norway and the United States of America. For these two countries, no support was found for the role of political trust (ibid.).

## **2.3 Theoretical framework and hypotheses**

In this section, the four middle-range theories will be explained in more detail and compared with each other. To understand how the middle-range theories differ from each other, an overarching theoretical framework is needed. By providing this framework, it becomes clear how the theories differ in their key assumptions. Moreover, a theoretical framework is needed to understand how the different theories interact with each other. By understanding the difference in assumptions between the theories, it becomes also possible to understand the interactions between the theories. To understand how the theories differ from and interact with each other, I resort to the use of the rational choice approach to develop a complete theoretical framework. The development of this theoretical framework is valuable, since earlier research on support for wealth redistribution only focused on one theory, instead of the differences and interactions between various theoretical mechanisms. I will, instead, posit how the middle-range theories can be positioned as part or extension of the rational choice approach. I will first explain the most standard elements of the rational choice approach and how these standard elements are interpreted differently by different theorists. After this, I will outline some extensions of the rational choice approach. Finally, I will place every theory in the theoretical framework and formulate corresponding hypotheses.

### **2.3.1 Standard elements of the rational choice approach**

The rational choice approach can be defined “as a family of theories explaining social phenomena as outcomes of individual action that can – in some way – be construed as rational” (Wittek et al., 2010, p. 5). In other words, the rational choice approach postulates that human actions are driven by some form of rational behaviour (ibid.). This definition is still very broad, because there are many variations of the rational choice approach and some interpretations are stricter than others (ibid.). Despite these different interpretations, rational choice theorists do share a common core (ibid.). Therefore, to understand the basics of the rational choice approach, I will explain its key elements, which are 1) actors, 2) preferences, 3) resources and constraints, and 4) rationality. Taking these four elements together makes the rational choice approach a theory of action. This means that the rational choice approach is focused on explaining

what people actually *do* (Scott, 2000, p. 126). In the upcoming paragraphs, I will explain the key elements of the rational choice approach, and I will outline how these key elements are interpreted differently by strict versus more relaxed interpretations of the rational choice approach.

First, the rational choice approach assumes that all social phenomena can be explained by the individual actions of which they are composed (Scott, 2000, p. 127). This idea can also be defined as methodological individualism (*ibid.*). In essence, methodological individualism assumes that social institutions and social change can be explained by focusing on rational individual human action (Elster, 1989, p. 13). There are many different forms of methodological individualism (Wittek et al., 2010, p. 9). On the one hand, there are strong versions of methodological individualism, arguing that social structures around individuals are irrelevant (Udehn, 2002). According to this interpretation, all social phenomena, like wealth redistribution policies, are composed of individual's behaviour (Dowding, 1991, p. 20; Udehn, 2002). On the other hand, weaker versions of methodological individualism emphasize the importance of social phenomena to understand the behaviour of individuals (Udehn, 2002). According to this interpretation, social phenomena are endogenous, because they are the consequences of individual's actions, but they are also exogenous, because these actions of individuals are in turn shaped by the social context in which they live (*ibid.*). Hence, the different versions of methodological individualism differ to the degree that social phenomena are a part of the explanation of people's behaviour (Wittek et al., 2010, p. 9). However, agency is always emphasized over structure by rational choice theorists, which indicates that individual choices always remain most important to explain outcomes (Hindmoor, 2006, p. 1).

Second, the rational choice approach argues that individual's actions are based on their preferences. This means that people behave according to what they prefer. However, there are various interpretations on what these exact preferences of individuals are. In the strict models of the rational choice approach, preferences are assumed to be stable and exogenously given (Wittek et al., 2010, p. 7). Moreover, these strict models assume that individual's preferences are based on their self-interest (Hindmoor, 2006, p. 195). Individuals are selfish and always strive to reach the maximum material gains (Wittek et al., 2010, p. 7). In these strict models, the actions of an individual are based on the idea that these actions are good to himself (Barbalet, 2012). Individuals therefore prefer actions that make them better off, meaning that they want to maximize their utility (Dowding, 1991, p. 20). In more relaxed versions of the rational choice approach, preferences are interpreted differently. For example, some models assume that people's preferences are partially based on the well-being of other actors (Wittek et al., 2010, p. 8). This demonstrates that selfishness is not a necessary component of the core element of preferences in the rational choice approach (*ibid.*). Moreover, not all rational choice theorists assume that all individual's preferences are tangible. Some intangible resources, like capabilities and competencies, are also valuable and may be preferred by individuals (*ibid.*). Furthermore, besides relaxing the assumption of tangible resources, some rational choice theorists argue that individuals do

not only strive to maximize resources (ibid., p. 8-9). Instead, individuals also highly value their physical and social well-being, besides only material gains (ibid.).

Third, the rational choice approach focuses on resources and constraints. This implies that the rational choice theory focuses on the behaviour of individuals and what they are able to do. The rational choice approach therefore outlines which resources are available to individuals to fulfil their preferences and which constraints obstruct them to reach their goals.

Fourth and finally, all rational choice approaches assume some form of rationality. To act rationally means choosing the best option available by calculating the benefits and costs of all available options (Elster, 1986, p. 4). This assumption of rationality indicates consistency and completeness (Dowding, 1991, p. 21). The latter refers to the fact that individuals will always prefer one option over another in their set of alternatives (ibid.). Again, there are different interpretations of the notion of rationality. In the strict models, full rationality is assumed (Wittek et al., 2010, p. 6). Here, it is presumed that individuals have full and complete information about all the possible decisions, the probabilities of the outcomes of these decisions, and their consequences (Goldthorpe, 2007; Wittek et al., 2010, p. 6). There are no mental shortcomings that hinder individuals in making the most rational choice. However, it is also often argued that individuals operate with 'bounded' rationality (March, 1986, p. 145; Hindmoor, 2006, p. 181; Simon, 1997). This means that individuals do not always have optimal beliefs or behave optimally in every situation (ibid.). By incorporating aspects of bounded rationality in the rational choice approach, one takes the complicated situations and complex strategies that involve higher costs into account (Van Damme, 1999). In these more relaxed models, it is assumed that individuals only have limited information, due to biases and selective attention and individuals sometimes choose satisfying options instead of the option that maximizes utility (Simon, 1997).

### **2.3.2 Extensions of the rational choice approach**

The core elements of the rational choice approach alone do not provide sufficient information to properly understand how the middle-range theories differ from and interact with each other. Instead, I need to outline some extensions of the rational choice approach. It is important to note that there are more extensions, however I only focus on the extensions that are necessary in this research. These extensions are 1) expectations, 2) pro-social preferences, and 3) asymmetric information.

First, the strict rational choice approach assumes that individuals make their decisions based on their exogenously given preferences (Minozzi, 2013). However, individuals often make different choices, even if the same options and outcomes are available. This can be explained by extending the rational choice approach by arguing that individual's beliefs and preferences are not completely exogenously given (ibid.). Instead, individual's expectations on the future are important and these expectations lead to differences anticipations on the outcome. Individual actors are not all the same, since they have, for example, different levels of education, are of different age, or are of different races. All these individual characteristics leads to different expectations when a decision is made. By relaxing

the assumption that individual's preferences are completely exogenous, these different expectations of individuals on the outcome can be incorporated.

Second, the strict rational choice approach outlines that people's preferences are purely based on self-interest. However, this does not explain what the exact preferences of individuals are. Therefore, the rational choice approach can be extended by relaxing this assumption by acknowledging that individuals also have pro-social preferences. This extension outlines that social preferences need to be endogenized in the rational choice approach (Wittek et al., 2010, p. 8). Individuals sometimes act out of solidarity, even if there are no direct personal benefits from their actions (ibid.). For example, in economic transactions people often find fairness important. Instead of getting the maximum out of the other party, which someone with only self-interested motives would do, individual's behaviour is tempered by considerations of fairness (ibid.). Admitting the importance of pro-social preferences is therefore the second extension of the rational choice approach.

Third and finally, strict rational choice theorists assume that people behave rationally based on perfect information. This indicates that all actors have perfect information to form their preferences and that there is no uncertainty (Hindmoor, 2006, p. 42). However, this assumption can be relaxed by acknowledging that individuals often face situations with asymmetric information. In these situations, some individuals have incomplete information, which will lead to uncertainty (Elster, 1986, p. 5). The information that is available is vague and diffuse, which makes it more difficult or even impossible for individuals to calculate the costs and benefits of various outcomes (ibid., p. 6). These situations of asymmetric information make individuals call for alternatives to form their opinion. By acknowledging the fact that individuals do not always have perfect information, situations without perfect information can be analysed with the rational choice approach.

### **2.3.3 Self-interest theory and hypotheses**

The self-interest theory argues that individual behaviour is driven by self-interest (Barbalet, 2012; Maine, 1905). It is assumed that individuals maximize their behaviour and have stable preferences which they pursue relentlessly (Becker, 1976). Based on these ideas of Becker (1976), one can claim that the notion of self-interest is associated with maximizing behaviour and making rational choices (Barbalet, 2012). At a basic level, the self-interest theory does not define what the exact interests of individuals are. However, the theory assumes that the interests of people are driven by their self-interest, regardless of their preferences. Applying the assumptions of the self-interest theory to explain support for wealth redistribution, I assume that self-interested people are in favour of redistribution policies if this financially benefits them. Individuals want to increase their own welfare, and wealth redistribution can be a way to achieve this.

The self-interest theory can be seen as a part of the strict assumptions of the rational choice approach. Strict versions of the rational choice approach assume that people's preferences are based on

self-interest. This is exactly what the self-interest theory encompasses. Therefore, this middle-range theory fits in the strict versions of the rational choice approach.

Using the assumptions of the self-interest theory, one can expect that wealthy people, i.e. citizens with a high income, oppose redistribution policies, while poor people, i.e. citizens with a low income, are in favour of redistribution. Individuals with a low income are more likely to financially benefit from wealth redistribution policies, as they are eligible to actually receive social security. Therefore, from a self-interested perspective, those people will support wealth redistribution policies. Individuals with a high income, on the other hand, are more likely to pay higher taxes. This reduces their wealth, and therefore, they will oppose wealth redistribution policies. The first hypothesis is therefore as follows:

*H1: The higher an individual's income is, the less they support wealth redistribution policies.*

Furthermore, high income inequality indicates high differences between high- and low-incomes. If there is a high level of income inequality in a country, poverty will be seen as more severe (Kanbur, 2005). In this situation, there is a larger group of poor people who will do what is financially most beneficial for them. Since wealth redistribution policies are aimed to reduce income inequality, this group will support those policies. Consequently, one can expect that the country's level of income inequality affects the individual support for wealth redistribution via income. For the large group of poor people in a country, income is expected to guide their opinion on support for wealth redistribution even stronger, because of the high levels of income inequality. This is also the case for the group of relatively rich people in the county: due to the high level of income inequality they want to redistribute their money even less. It is hence expected that the country's level of inequality affects the costs and benefits of wealth redistribution for individuals, which in turn influences the effect on an individual's income on support for wealth redistribution. Based on this argumentation, the following hypothesis can be formulated:

*H2: The higher the national level of income inequality in a country is, the stronger is the effect of an individual's income on support for wealth redistribution.*

### **2.3.4 Social mobility theory and hypotheses**

The social mobility theory outlines that prospects of upward mobility should be considered in the decision-making process of individuals (Bénabou & Ok, 2001). Individuals do not only take their current income position or current income inequality into account, but also look at their individual possibilities for upward mobility in the future (ibid.). Even if individuals are poor, they will still oppose wealth redistribution policies if they believe that they, or their offspring, will earn more later and therefore will be hurt by strong redistribution policies (ibid.). The social mobility therefore argues that individuals will

have lower support for wealth redistribution policies if they expect to earn more in the future (Alesina & La Ferrara, 2005). These expectations on upward mobility in the future are not necessarily the same as actual upward mobility. For example, an individual could expect high upward mobility in the future, but in the end does not reach this (Bénabou & Tirole, 2002). Individuals can be more optimistic about their future social mobility, based on factors such as age and education (Blanden et al., 2004; Cojocaru, 2014). This optimism, obtained from self-confidence, can improve welfare, but it can also be self-defeating (Bénabou & Tirole, 2002; Minozzi, 2013). In other words, individual's expectations on the future are not always fulfilled.

In essence, the social mobility does not deviate from the key elements and assumptions of the strict rational choice approach. The social mobility focuses on what individual actors do and assumes that individuals behave rationally and strive for the best financial situation possible (Bénabou & Ok, 2001). However, the social mobility extends the ideas of the self-interest theory by assuming that actors also take information on future situations in account. Therefore, the key difference with the self-interest theory is that future income prospects are taken into account, besides the current income situation in the social mobility theory. Given the same self-interested preferences of individuals, people make different decisions regarding their support for wealth redistribution. Actors are not all the same, as they have, for example, different levels of education and because they are not of the same age. These individual characteristics lead to different expectations of upward mobility in the future, given the same preferences of individuals. The strict assumptions of the rational choice approach are hence relaxed by taking these individual expectations into account. The strict standard rational choice approach assumes that individuals maximize their behaviour at a certain point in time, but this can be extended by assuming that actors also consider their expectations on the future. This is where the social mobility theory steps in. Individual characteristics, like age and education, lead to different expectations on the future, but all individuals remain self-interested and their self-interested preferences are assumed to guide their rational behaviour.

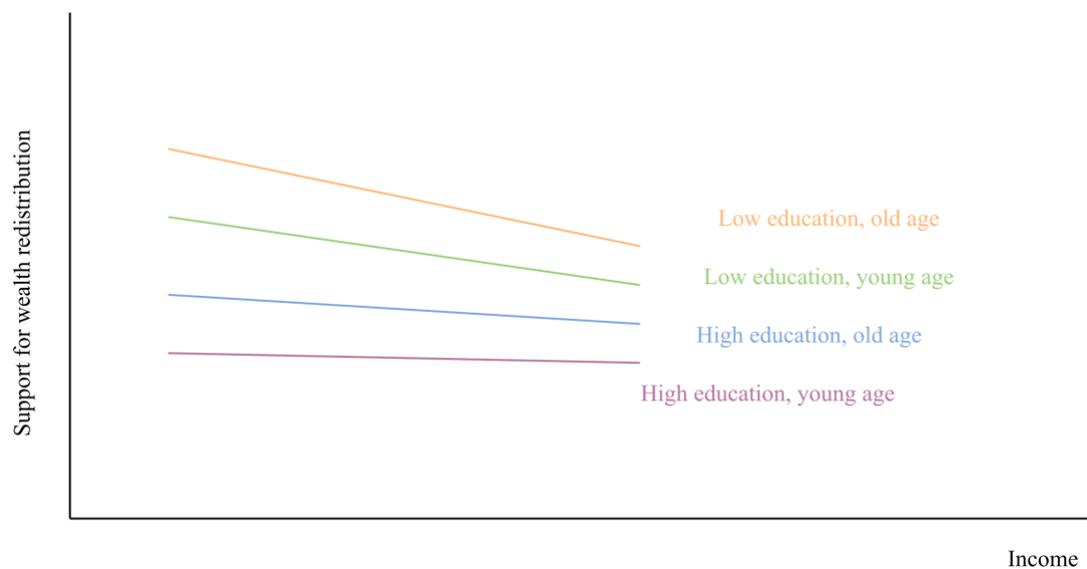
According to the social-mobility theory, individual expectations on the future are important. These expectations are, in turn, formed by individual characteristics. First, higher education is associated with lower lifetime unemployment, higher status and a longer work life (Card et al., 2018). One can therefore expect that highly educated people will earn more in the future, thereby their prospects of upward mobility are higher. Second, younger people will, generally speaking, be more optimistic about prospects for social mobility. This is because upward mobility is seen as a natural progress in their career (Cojocaru, 2014). The effect of income on support for wealth redistribution is hence expected to be affected by someone's educational attainment and age, leading to the following two hypotheses:

*H3: The older an individual is, the stronger is the effect of income on support for wealth redistribution.*

*H4: The higher an individual's education level is, the weaker is the effect of income on support for wealth redistribution.*

Moreover, education and age will most likely interact with each other. This three-way interaction model is graphically displayed in Figure 2.1.

**Figure 2.1: Three-way interaction model (own work)**



If an individual is young and highly educated, current income is expected to have a weaker effect on support for wealth redistribution than when an individual is old and poorly educated. This is because for highly educated, young individuals the prospects of upward mobility are high, which is expected to strongly reduce their current support for wealth redistribution, even if their current income level is low. When these highly educated people get older, these prospects of upward mobility decrease, as upward mobility is not a natural progress anymore due to their age. For older and poorly educated people, the opposite is true. Those individuals have very low prospects of upward mobility in the future because of their education level and age, thereby their support for wealth redistribution will be higher. The prospects of upward mobility will be somewhat higher for younger, poorly educated people. Despite their low level of education, they still have some prospects of upward mobility due to the possibilities of their young age. This argumentation leads to the following three-way interaction hypothesis:

*H5: The higher an individual's education level and the younger an individual is, the weaker is the effect of income on support for wealth redistribution.*

### **2.3.5 Cultural theory and hypotheses**

Understanding cultural theory asks for a clear definition of the concept first. This definition is, however, difficult to formulate, as ‘culture’ can have different meanings in different contexts (Edgar & Sedgwick, 2008, p. 82; Smith, 2001, p. 1). In this thesis, I will define culture as “the entire way of life, activities, beliefs, and customs of a people, group, or society” (Smith, 2001, p. 2). This is still a broad definition, but it excludes other elements of culture such as artistic products, like film and theatre, and the spiritual development of individuals (ibid.). This is because these broader aspects of culture are assumed to not be relevant when researching support for wealth redistribution policies. Using this definition, I assume that cultural theory focuses on the activities, beliefs, and customs of individuals or groups and aims to understand how this shapes people’s behaviour. One could therefore argue that cultural theory focuses on the immaterial, instead of the material (ibid., p. 3-4). These cultural products, like beliefs, are related to political structures and social hierarchies (Edgar & Sedgwick, 2008, p. 81). Moreover, these cultural products form people’s interests and guide their behaviour (Edgar & Sedgwick, 2008; Smith, 2001). These beliefs and values of individuals are already formed in a relatively early stage of life, and tend to stay relatively stable throughout life (Inglehart, 1977). Cultural theory thus assumes that deeply-rooted beliefs and values produce the actions of individuals. Applying this theory to the concept of support for wealth redistribution, I argue that the impact of income and income inequality on support for wealth redistribution is based on the cultural values and beliefs of individuals.

At first sight, cultural theory seems to be the opposite of the other middle-range theories. However, I would argue that the cultural theory does not necessarily deviate from the key elements of the rational choice approach. Instead, the ideas behind cultural theory can be explained by extending the rational choice approach. The self-interest theory argues that individuals behave according to their self-interest. This does not specify what the exact preferences of individuals are, it only mentions that these preferences are based on self-interest. This is where the cultural theory steps in. Instead of assuming that people are just self-interested human beings, cultural theory argues that not all individual’s preferences are purely economic. Individual’s preferences can also be pro-social, focused on helping others or achieving fairness. In other words, deeply-rooted values and beliefs form people’s preferences. Relaxing the assumptions of having only self-interested preferences is therefore needed. If an altruistic individual gets satisfaction from helping others, giving help can be seen as the rational choice to make (Scott, 2000). Therefore, by incorporating pro-social preferences in the rational choice approach, cultural theory fits in this overarching theoretical framework. This is done by delineating the existence of pro-social preferences, instead of only assuming self-interested behaviour.

When focusing on individual’s values, a distinction between individuals with materialist versus post-materialist values can be made. While materialists focus on economic and physical security, post-materialists focus on more non-material values such as self-expression and quality of life (Inglehart, 1977). By making this broad distinction, values like egalitarianism and self-determination are automatically included in the analysis. One could argue that post-materialists are less focused on

economic security than materialists, and therefore they are expected to support redistribution policies more than materialists. For post-materialists, the level of income is not decisive alone in forming one's support for wealth redistribution, as these individuals prioritize other non-materialist values. Therefore, the impact of income on support for wealth redistribution is expected to be weaker when individuals have more post-materialist values. This leads to the following hypothesis:

*H6: The more post-materialist values an individual holds, the weaker is the effect of income on support for wealth redistribution.*

### **2.3.6 Principal-agent theory of trust and hypotheses**

The principal-agent theory of trust posits that there is a principal-agent relationship in which the principal contracts with the agent to perform tasks on their behalf (Hindmoor, 2006, p. 134). These relationships consequently cause principal-agent problems (ibid.). One of these problems is that principals often have incomplete information (ibid.). They cannot know with absolute certainty whether the agent fulfils the asks in the preferred way (ibid.). This is problematic, as agents often have conflicting interests (ibid.). Therefore, they are not necessarily inclined to act in the principal's interests (ibid.). Principals will therefore need to have trust to contract with the agent. Applying this to the concept of support for wealth redistribution, one can also identify a principal-agent problem. If individuals are in favour of more redistribution policies, they have to contract with the government, who has to fulfil this task. However, individuals cannot know if the government will use their money in the right way. Because of this asymmetrical information, it becomes important whether these individuals trust the government.

By positioning the principal-agent theory of trust in the theoretical framework, one of the assumptions of the strict rational choice approach needs to be relaxed: the assumption of perfect information. This assumption is relaxed, because individuals often face situations when they do not have all information. In these situations of asymmetrical information, the just described principal-agent problem arises. Individuals (principals) cannot know with absolute certainty whether the policy promises of the government (the agent) will be fulfilled (Hinich & Munger, 1996). Due to this uncertainty, it becomes highly important whether individuals see the government as being trustworthy (Hindmoor, 2006, p. 42). Individuals are still rational human beings who want to maximize their utility. However, since there is an inevitable lack of information, beliefs of individuals will come into play. More specifically, beliefs about other actors, i.e. the trustworthiness of the government, will become important. Hence, analysing political trust asks for extending the rational choice approach, as political trust comes into play due to the principal-agent problem. This problem arises due to a lack of perfect information; therefore, the standard core elements of the rational choice approach need to be relaxed by incorporating situations with asymmetric information.

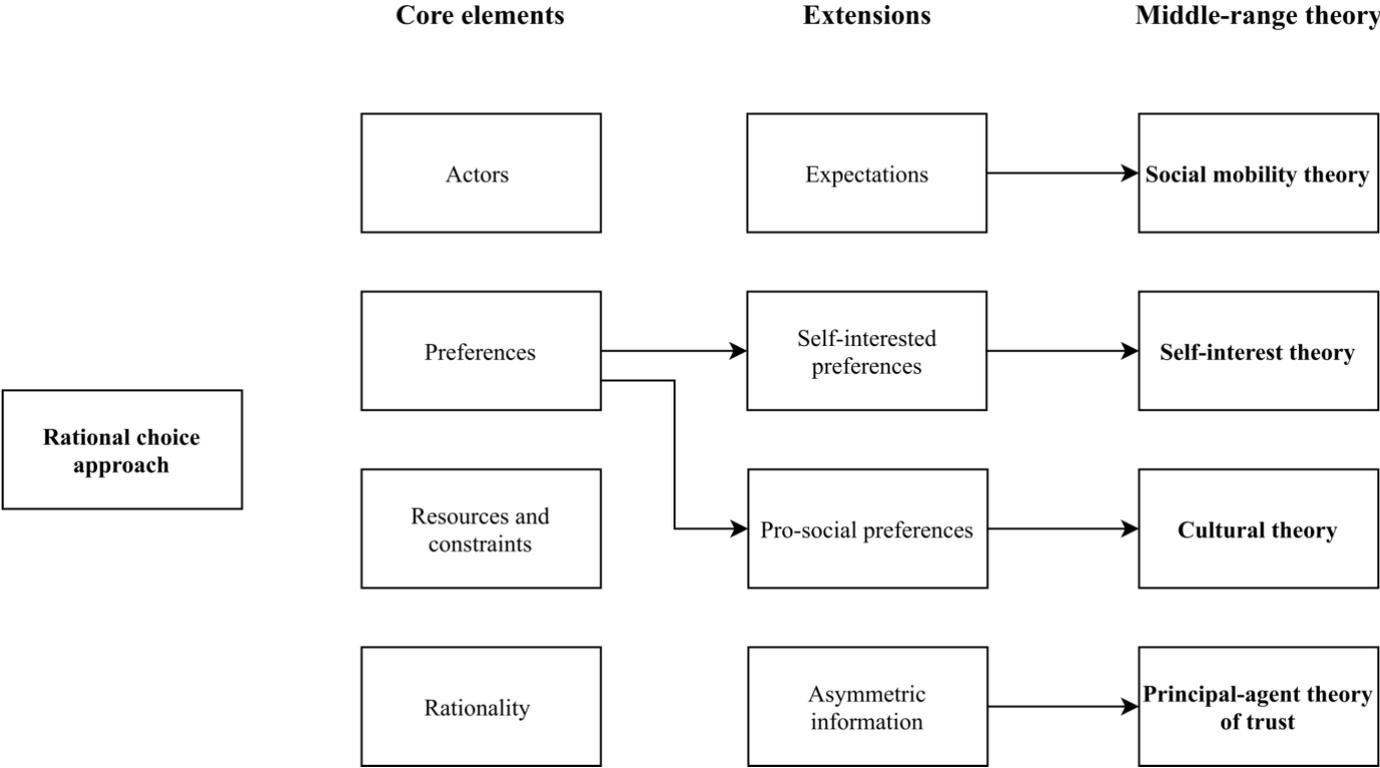
The principal-agent theory of trust outlines that individuals consider their beliefs on the trustworthiness of the government when deciding their support for wealth redistribution. Individuals will support wealth redistribution policies as long as they believe that these policies will be used in a good way, so that they can also benefit from it. On the one hand, high-income earners can still support wealth redistribution policies if they have a high level of political trust. On the other hand, poor people can still oppose wealth redistribution policies if their level of political trust is low. Therefore, it is expected that the impact of income on support for wealth redistribution will be weaker if the level of political trust is higher. This can be translated into the following, last hypothesis:

*H7: The higher the individual's level of political trust is, the weaker is the effect of income on support for wealth redistribution.*

**2.4 Overview theoretical synthesis and hypotheses**

An overview of the theoretical synthesis based on the rational choice approach can be found in Figure 2.2. Based on this theoretical synthesis, the hypotheses were formulated. All hypotheses are presented in Table 2.1. These hypotheses will be empirically tested in chapter 4.

**Figure 2.2: Theoretical synthesis (own work)**



**Table 2.1: Overview of the hypotheses**

<i>Hypothesis</i>	<i>Level</i>	<i>Theory mechanism*</i>			
		<i>SIT</i>	<i>SMT</i>	<i>CT</i>	<i>PAT</i>
<b>H1:</b> The higher an individual's income is, the less they support wealth redistribution policies.	Micro-level	X			
<b>H2:</b> The higher the national level of income inequality in a country is, the stronger is the effect of individual's income on support for wealth redistribution.	Cross-level interaction	X			
<b>H3:</b> The older an individual is, the stronger is the effect of income on support for wealth redistribution.	Micro-level interaction	X	X		
<b>H4:</b> The higher an individual's education level is, the weaker is the effect of income on support for wealth redistribution.	Micro-level interaction	X	X		
<b>H5:</b> The higher an individual's education level and the younger an individual is, the weaker is the effect of income on support for wealth redistribution.	Micro-level interaction	X	X		
<b>H6:</b> The more post-materialist values an individual holds, the weaker is the effect of income on support for wealth redistribution.	Micro-level interaction	X		X	
<b>H7:</b> The higher the individual's level of political trust is, the weaker is the effect of income on support for wealth redistribution.	Micro-level interaction	X			X

\* SIT = self-interest theory, SMT = social mobility theory, CT = cultural theory, PAT= principal-agent theory of trust

## **Chapter 3: Data and methodology**

In this chapter, the research methods of this thesis will be discussed. This will be done by outlining the research approach, describing the case selection, discussing the used datasets, operationalizing all the variables used, and explaining the research methods, which consists of multilevel regression analysis.

### **3.1 Research approach**

The aim of this research is to gain insight in the impact of different theories on the relationship between income and income inequality and support for wealth redistribution. This research subject fits the approach of a large-N quantitative research. This approach allows me to research a large number of observations at one time, instead of focusing on one or a few cases (Gerring, 2017, p. xvii). By using a large-N approach, it is possible to compare big groups of people in different countries at different points in time (ibid.). The use of a large number of observations also gives the possibility to generalize the results to a broader population (Field, 2013, p. 44). Moreover, the context of people can be taken into account in a large-N study, by controlling for country-level characteristics and confounders (ibid.). Confounders affect both the dependent variable – support for wealth redistribution – and the independent variables – income and income inequality – but are not explained in the tested theories (ibid., p. 872). A large-N study is the best research approach to control for the effect of these confounders. A large-N quantitative research design is therefore the best research approach to test the hypotheses.

### **3.2 Case selection**

In this thesis, the impact of income and income inequality on support for wealth redistribution is researched in twelve Latin American countries over the period of 1990 to 2014. In this section, I will explain the deliberate choice for this region and time period. To start, it is important to research the Latin American region, given the high levels of income inequality and the large number of poor people (De Ferranti et al., 2004). Moreover, actual redistribution is limited in this region, and the question whether citizens support wealth redistribution policies remains unanswered (Luebker, 2014). However, the Latin American region is often neglected, as previous research primarily focussed on the United States and Europe. These different reasons make Latin America, from a theoretical perspective, the most relevant region to research.

In this research, the countries analysed are Argentina, Brazil, Chile, Colombia, Dominican Republic, Ecuador, El Salvador, Guatemala, Mexico, Peru, Uruguay and Venezuela. These countries are part of the Latin American region and contain sufficient data on the dependent variable: support for wealth redistribution. Puerto Rico and Haiti were excluded from the dataset, since there were only limited observations for these countries and because data on one of the main independent variables, income inequality, was missing for these countries.

The time period analysed spans from 1990 to 2014. This time period entails the most recent data available over a relatively long time period. In this research, data from mainly the World Values Survey (WVS) will be used. This dataset will be further explained in the data section. More specifically, the aggregated WVS data-file is used, which contains all information on all six waves of documentation (World Values Survey, 2020a). Since only Latin American countries will be included, this dataset with a longer time period is chosen to make sure that enough data could be collected. However, documentation on Wave 1 was excluded from the analysis, since the measurement of wealth redistribution was not included in this wave. For some of the hypotheses, a shorter time period was used. This is because for those hypotheses, data for the whole period was unfortunately unavailable.

### **3.3 Data**

In this section, an overview of all the data used will be described, including an explanation of why these datasets have been chosen. Data is primarily used from the World Values Survey (WVS). Besides the WVS, additional data from other datasets is used for the macro-level variables. In the upcoming paragraphs, each dataset will be reviewed.

#### **3.3.1 World Values Survey (WVS)**

The WVS is composed of surveys conducted in around 100 countries. The surveys consist of a common questionnaire, in which changing values and their impact on social and political life are being studied (World Values Survey, 2020b). The WVS is covering very poor to very rich countries and has been conducted over four-year time periods since 1981 (ibid.). In total, there have been six waves until now, the last round consists of data from 2010 to 2014 (World Values Survey, 2020a). The WVS is preferable to use for this research, since it includes a high number of individual-level characteristics for Latin American countries.

In this thesis, the aggregated WVS data-file will be used. This longitudinal multiple-wave documentation covers data of all six waves, i.e. from 1981-2014 (World Values Survey, 2020c). Using this longitudinal dataset gives the advantage to compare data on Latin-American countries over a longer period of time. By using this, more observations can be analysed for each country. This is preferable, as this will give more reliable and valid results (Field, 2013, p. 44).

#### **3.3.2 The World Bank**

In this research, I will also use several country-level indicators. In order to measure the degree of income inequality, data from the World Bank is retrieved. The databank of the World Bank contains time-series data on different topics regarding global development, like education statistics, gender statistics, and poverty statistics (The World Bank, 2020a). Data from the World Bank will be used to operationalize income inequality. Moreover, data will be used from the World Bank databank to control for the effect

of potential confounders in the empirical model, such as GDP per capita and a country's net migration rate. In the robustness analysis, I will also use data of the LAC Equity Lab, a part of the World Bank databank in collaboration with CEDLAS (The World Bank, 2016a). CEDLAS is a research center specialized in studying social issues in developing countries (CEDLAS, n.d.). The LAC Equity Lab is a comprehensive source and contains data on different indicators for the Latin American and Caribbean countries (The World Bank, 2020b). Data on the different indicators to measure income inequality is available for the period 2000 – 2014 in the LAC Equity Lab (The World Bank, 2016a). Since the LAC Equity Lab only contains data for a limited period, I prefer to measure income inequality by using the GINI-coefficient from the general World Bank databank. In the robustness analysis, the Theil Index, GE(1), a different indicator to measure income inequality, from the LAC Equity Lab will be used.

### **3.3.3 Historical Index of Ethnic Fractionalization Dataset (HIEF)**

The HIEF dataset contains information on the degree of ethnic fractionalization per country over time (Drazanova, 2019). In total, there are 8808 observations for 165 countries over all countries available (ibid.). This makes the dataset very useful to gain information on the degree of ethnic fractionalization in Latin America. This dataset will be solely used to measure the degree of ethnic fractionalization, which is a control variable in this research. More information on this dataset and how ethnic fractionalization is operationalized in the dataset will be provided in the section on the operationalization of this variable.

## **3.4 Operationalization**

### **3.4.1 Dependent variable: support for wealth redistribution**

The dependent variable of this research is individual support for wealth redistribution policies. The operationalized variable should therefore measure whether an individual supports governmental policies that reduce the wealth of the rich and increase the wealth of the poor. In the aggregated WVS data-file, this is best measured by indicator E0035 (World Values Survey, 2015). This indicator contains the following question:

*“How would you place your views on this scale? Incomes should be made more equal versus We need larger income differences as incentives for individual effort.”*

Respondents were asked to rate their opinion on a 1-10 scale, where a score of 1 meant that the respondent completely agrees that incomes should be more equal and a score of 10 meant that the respondent completely agrees that larger income differences are needed (World Values Survey, 2015).

This variable has a quasi-interval measurement level<sup>3</sup>. In my dataset, this variable is called ‘sfwr1’ and relabelled from ‘Income equality’ to ‘Individual support for wealth redistribution’. Appendix A contains an extensive explanation for the choice of this indicator as dependent variable, instead of indicator E037 which measures government responsibility.

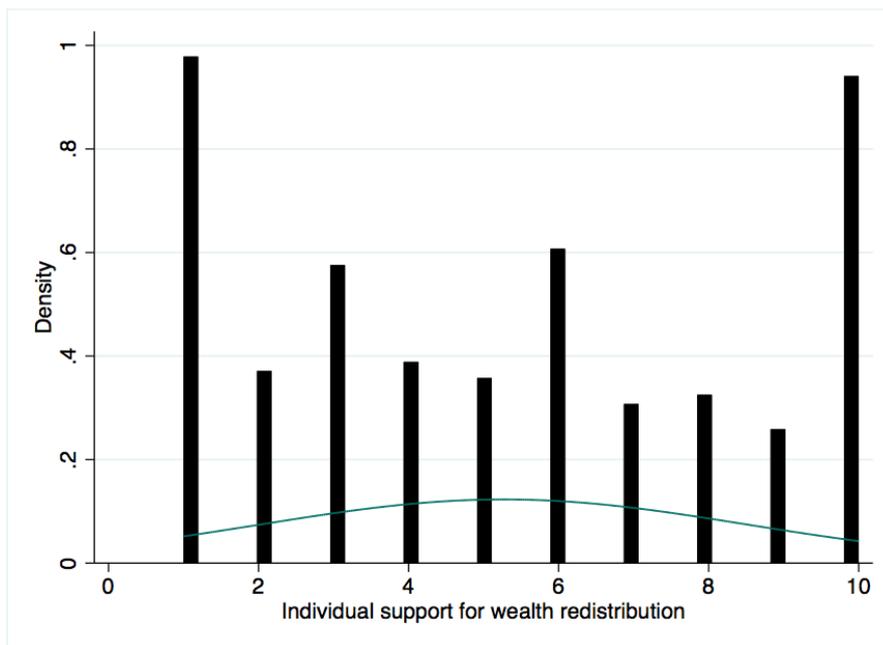
The original coding of this variable, where more support for wealth redistribution was indicated with a lower value on the variable, is counterintuitive to interpret. Therefore, the original variable has been reverse-coded. After this reverse coding, a score of 1 indicates that income differences are needed and a score of 10 indicates that incomes should be made more equal. Hence, a higher score indicates higher support for wealth redistribution. This recoded variable is easier to interpret and will therefore be used in this research.

Finally, the dependent variable is not normally distributed. This is because a lot of people either strongly support or oppose wealth redistribution policies. This makes the distribution of the variable heavy tailed, which is visible in the histogram in Figure 3.1. Nevertheless, due to the large number of observations, the influence of the heavy tailed distribution is expected to be negligible (Field, 2013, p. 20). Therefore, I have decided to treat the variable as a normally distributed variable. As robustness check, I will conduct additional analysis to account for the heavy tailed distribution of the dependent variable.

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<sup>3</sup> Support for wealth redistribution is measured by a quasi-interval scale, meaning that the scaling falls between ordinal and interval measurement level (Field, 2013, p. 8-11). By treating the variable as if it were interval, most information can be captured and the results will be better interpretable.

**Figure 3.1: Histogram individual support for wealth redistribution**



Source: Aggregated WVS data-file, 1990-2014

### 3.4.2 Independent variables: micro-level

The upcoming paragraphs will cover the operationalization of each independent variable. Three independent variables, i.e. income, post-materialism, and political trust, are of quasi-interval level measurement. This means that the scaling of these variables falls between ordinal and interval measurement level (Field, 2013, p. 8-11). The predicted values of the effect of these variables on support for wealth redistribution show a relationship which is approximately linear. This is also visually displayed in Appendix B. Therefore, I will treat these variables as variables of interval measurement level. By doing this, most information is captured and the results are better interpretable (ibid.). Since one can doubt if the predicted values of political trust show a linear relationship, I used dummy-analysis as a robustness check for this variable.

#### 3.4.2.1 Income

An individual's income is measured by the variable 'Scale of incomes', indicator X047 of the aggregated WVS data-file. Here, respondents were asked to rate the income of their household on a scale from 1 to 10 by the following question (World Values Survey, 2015):

*“On this card is an income scale on which 1 indicates the lowest income group and 10 the highest income group in your country. We would like to know in what group your household is. Please specify the appropriate number, counting all wages, salaries, pensions and other incomes that come in.”*

A score of 1 means that the respondent is in the lowest income group, a score of 10 means that the respondent is in the highest decile of the income scale (ibid.). Measuring income in this way has two

main advantages. First, this relative income scale can be compared across countries. Second, this income scale captures whether someone is relatively poor or rich. This is valuable, since it is hypothesized that people who are relatively rich oppose wealth redistribution policies, and people who are relatively poor support those policies. Income is a variable with a quasi-interval measurement level.

### 3.4.2.2 Education level

The level of an individual's education is measured by using the variable 'Education' of aggregated WVS data-file. Respondents were asked what the highest level of education is that they have attained (reported with indicator X025<sup>4</sup>). If the respondent was a student, the highest expected level of education was coded (World Values Survey, 2015). The question and the different answers were as follows:

*“What is the highest educational level that you have attained?”*

- 1: *Inadequately completed elementary education;*
- 2: *Completed (compulsory) elementary education;*
- 3: *Incomplete secondary school: technical/vocational type / (compulsory) elementary education and basic vocational qualification;*
- 4: *Complete secondary school: technical/vocational type;*
- 5: *Incomplete secondary: university-preparatory type / secondary, intermediate general qualification;*
- 6: *Complete secondary: university-preparatory type / full secondary, maturity level certificate;*
- 7: *Some university without degree / higher education – lower-level tertiary certificate;*
- 8: *University with degree / higher education – upper-level tertiary certificate.”*

A score of 1 means that the respondent did not complete elementary education, a score of 8 indicates that the respondent successfully completed university-level education, which is the highest level of education (ibid.). This variable is measured at ordinal level, meaning that there is a meaningful hierarchy between the different values of the variable, but that the degree of variation between the different levels is not necessarily always the same (Field, 2013, p. 9). Therefore, dummies were computed representing the different levels of education. To create meaningful categories, I used the LIS standardised levels to divide the different levels of education (OECD, 1999). Categories 1, 2, and 3 are categorized under the dummy 'lower education'. Categories 4 and 5 are categorized under the dummy 'middle education' and categories 6, 7, and 8 are categorized under the dummy 'higher education'. The category of lower education was chosen as the reference category.

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<sup>4</sup> Alternatively, indicator X025R which recoded the level of education in three categories: lower, middle and upper, could have been used. However, values on this indicator were not available for the Latin-American countries of this research (World Values Survey, 2015).

### 3.4.2.3 Age

Someone's age is measured by indicator X003 of the WVS aggregated data-file labelled as 'Age'. Here, a respondent's age is asked by the following question (World Values Survey, 2015):

*"This means you are \_\_\_ years old (write age in two digits)."*

With this variable, an individual's age is measured in years. The variable is of ratio measurement level.

### 3.4.2.4 Materialist versus post-materialist values

To measure the extent to which an individual possesses materialist versus post-materialist values, the WVS contains a twelve-item post-material values index<sup>5</sup>. In this index, respondents are presented with twelve different government aims, divided over three questions. In every question, respondents are presented with four of the twelve government aims and they are asked to choose which government aim they find most important and second-most important (World Values Survey, 2015). The first choice that people have to make is between 1) a high level of economic growth (material), 2) making sure this country has strong defense forces (material), 3) seeing that people have more say about how things are done at their jobs and in their communities (post-material), and 4) trying to make our cities and countryside more beautiful (post-material). The second choice that respondents have to make is between the government aims 1) maintaining order in the nation (material), 2) giving people more say in important government decisions (post-material), 3) fighting rising prices (material), and 4) protecting freedom of speech (post-material). The third choice that respondents make is between the aims 1) a stable economy (material), 2) progress toward a less impersonal and more humane society (post-material), 3) progress toward a society in which ideas count more than money (post-material), and 4) the fight against crime (material) (ibid.).

Based on the six items selected by the respondent, his/her post-materialist score is calculated in the aggregated WVS data-file, captured by indicator Y001. A respondent is classified as being materialist if he/she has a score of 0 and post-materialist if he/she has a score of 5 (World Values Survey, 2015). The post-material values index of the aggregated WVS data-file is of quasi-interval measurement level.

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<sup>5</sup> The aggregated WVS data-file also contains a four-item post-material values index. This index is, however, not used, since this index is more likely to be affected by changes in the economic situation of a country (Inglehart 1990; Inglehart, 1997). The twelve-item index is seen as more reliable, as research indicated that someone who is classified as post-materialist in the twelve-item index, is actually more likely to indeed favour post-materialist values, such as freedom of expression and gender equality (Inglehart & Baker, 2000).

### 3.4.2.5 Political trust

Political trust is measured with item E069\_11 of the aggregated WVS data-file<sup>6</sup>. In this question, respondents were asked to rate their confidence in a number of organizations, of which one was the government in the country's capital (World Values Survey, 2015). More specifically, the respondents answered the following question:

*"I am going to name a number of organizations. For each one, could you tell me how much confidence you have in them: is it a great deal of confidence, quite a lot of confidence, not very much confidence or none at all?"*

- *The government (in your nation's capital).*

A score of 1 means that the respondent had a very high confidence in the government, a score of 4 indicated that the respondent did not have any confidence in the government (ibid.). To make the variable easier to interpret, the variable has been reverse-coded in the dataset. After this recoding, a higher score indicates a higher level of political trust. The variable to measure political trust is of quasi-interval measurement level.

## 3.4.3 Independent variables: macro-level

### 3.4.3.1 Income inequality

There are multiple measurements of income inequality, and each measurement has its advantages and downsides (Haughton & Khandker, 2009, p. 105). In Appendix C, one can read the six requirements that a good measurement of income inequality has to meet. Based on these requirements and the availability of the data, I chose the best indicator to measure income inequality in Latin America. This will be the Gini-coefficient, retrieved from the World Bank (The World Bank, 2019a). Using this index, a value of 0 represents perfect equality, and a value of 100 represents perfect inequality (ibid.). The downside of using this measurement is that the Gini-coefficient is not decomposable (Haughton & Khandker, 2009, p. 105). Instead, I could have also used the Theil Index, GE(1) as indicator. This measurement does satisfy all the criteria of a good measurement of inequality (ibid.). However, there is limited availability of the Theil Index, as data from the LAC Equity Lab is only available for the period 2000-2014 (The World Bank, 2016a). As a consequence, more than 50 percent (54.83%) of the data would be automatically missing if this measurement is used. For the Gini-coefficient, which is available in the World Bank databank, there are also missing values, but unquestionably less. For this variable, around 30 percent (29.66%) of the data is missing. Due to the better availability of the data of the Gini-coefficient and the fact that I am only interested in national income inequality and not income inequality

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<sup>6</sup> Alternatively, I could have also included an individual's confidence in political parties (item E069\_12) in the dataset to measure an individual's level of political trust. However, I am mostly interested in the principal-agent dilemma that arises between the government and individuals. Individuals could not trust the government, but still trust opposition-parties. Therefore, indicator E069\_12 was not included to measure the level of political trust.

in subgroups, I have chosen to use the Gini-coefficient as indicator to measure income inequality. As robustness check, I will also measure income inequality with the Theil Index, GE(1).

### **3.4.4 Control variables**

It is crucial to control for potential confounders: variables that influence both the dependent and independent variable (Field, 2013, p. 872). If I would not control for confounders, there is a risk of biased results, which could lead to false support or rejection of the formulated hypotheses (ibid.). Therefore, I will control for the following variables: gender, ethnic fractionalization, GDP per capita and migration rates. These variables and their operationalization will be shortly discussed in the following paragraphs. In Appendix D, one can read why self-determination beliefs are not included as control variable in this research.

#### **3.4.4.1 Gender**

Previous research demonstrated that men are, generally speaking, less supportive of wealth redistribution policies than women (Fong, 2001). Moreover, women are more likely to adhere to post-material values (Inglehart, 1979). Therefore, gender is a possible confounder of both the dependent and independent variable and is included as control variable. Someone's sex is being asked in question X001 of the aggregate WVS data-file (World Values Survey, 2015). This question is transformed in a dummy variable in the empirical model: a value of 1 indicates that the respondent is male, a value of 0 indicates that the respondent is female.

#### **3.4.4.2 Ethnic fractionalization**

The second control variable in this research is ethnic fractionalization. Generally speaking, ethnic fractionalized countries have lower levels of wealth distribution than less fractionalized countries (Becker, 1957). More specifically, racial divisions and racial preferences are negatively related with the support for wealth redistribution, especially if poverty is concentrated in minority groups (Alesina & Glaeser, 2004, p. 10). Various research demonstrated this negative relationship between ethnic fractionalization and support for welfare redistribution (Alesina et al., 2003; Desmet et al., 2009; Desmet et al., 2012; Sturm & De Haan, 2015). This could be because homogenous groups have a higher altruistic attitude compared with more culturally diverse groups and because individuals have a significant degree of within-group-affinity, which influences their decisions regarding public benefits (Vigdor, 2004). Furthermore, ethnic fractionalization is especially relevant to include when researching the Latin American region, giving the high level of ethnic heterogeneity in Latin America (Yashar, 2015). Although Afro-descendants and indigenous people currently have a better position on the political agenda, there still is racial and ethnic inequality (ibid.; De Ferranti et al., 2004). Moreover, the indigenous people in Latin America represent for a large part the poor part of society (Freire et al., 2015).

To measure the degree of ethnic fractionalization in a country, the Historical Index of Ethnic Fractionalization (HIEF) Dataset is used (Drazanova, 2019). The HIEF dataset contains an index of ethnic fractionalization for the period of 1945-2013. Data is available for 165 countries across all continents, including the Latin American countries of this research (ibid.). This index shows the probability that two randomly drawn people within a country are from different ethnic groups (ibid.). A higher index thus corresponds with a higher level of ethnic fractionalization in a country. By using this index, it is possible to compare ethnicity across countries and over time (ibid.).

#### **3.4.4.3 GDP per capita**

The third control variable that will be included in the empirical model is the macro-level variable GDP per capita. Earlier research found that a country's GDP level can affect support for wealth redistribution (Brueckner & Lederman, 2018). This possible relationship is expected, because income inequality is positively correlated with GDP per capita growth (ibid.). Since I focus on the impact of income inequality on support for wealth redistribution, it is important to control for potential confounders on income inequality. Therefore, GDP per capita is included in the model as control variable. To measure GDP per capita, data from the World Bank is retrieved (The World Bank, 2019b). More specifically, GDP per capita in dollars is included per year for each Latin American country.

#### **3.4.4.4 Net migration rates**

Finally, migration rates per country will be included as control variable. Previous research demonstrates that immigration affects the attitude of individuals about government redistribution (Burgoon et al., 2012). If there is a high exposure to immigration at the occupational-level, this increases support for wealth redistribution (ibid.). This is because this high exposure increases the risk that work is substituted by foreign workers, which increases the risk of income loss and unemployment (Finseraas, 2008). However, other research indicates that high immigration rates actually reduce support for wealth redistribution, since it undermines feelings of solidarity (Eger, 2010). Although the direction of the relationship is not clear, it is highly possible that immigration rates affect the dependent variable of this research. Therefore, net immigration rates of the Latin American countries investigated will be included in the empirical model as control variable. This will be done by using data from the World Bank. Here, the net migration rate of a country is calculated by counting the number of immigrants minus the number of emigrants in a country (The World Bank, 2019c). To make sure that data can be compared across countries and over time, this number is divided by the total number of inhabitants in a country and thereafter multiplied by 1000 (ibid.). Values on net migration rates were not presented for each year, but only every four or five years. In Appendix E, I explain how I have solved this measurement problem. In short, the mean value between two reported years is calculated and used as value for the years between those reported years.

### **3.5 Research methods**

In this part, I will explain which research methods will be used to test the hypotheses. First, I will explain why the commonly used ordinary least squares (OLS) regression analysis is not the appropriate research method. Thereafter, I will explain why the use of multilevel regression analysis is the solution and the appropriate research method to use. Finally, I will show the data structuring and outline how variables are recoded.

#### **3.5.1 OLS regression analysis**

A very often used research method to test the relationship between independent variables and the dependent variable is OLS regression analysis (Field, 2013, p. 294). Here, the effects of multiple independent variables are estimated on the dependent variable by calculating the regression line in which the sum of squared errors is minimized (ibid.). In Appendix F.1, more information on this research method and the assumptions of OLS regression analysis can be found.

#### **3.5.2 Multilevel regression analysis**

As described in Appendix F.1, one of the assumptions of OLS regression analysis is the assumption of independent errors (Field, 2018, p. 387). This assumption will most likely be violated in this research, since I will use nested data. This means that the individual observations are hierarchically structured in groups (ibid, p. 937). In this research, individuals are nested in country-wave combinations. It is therefore possible that the answers of an individual are influenced by the country in which this person lives and the survey-wave in which this respondent answered the questions. Consequently, there are micro-variables, for example income, which vary within country-wave combinations, but also macro-level variables, for example income inequality, which only vary between country-wave combinations.

The consequence of using nested data is that the assumption of independent errors is violated. The error term for individuals in a specific country will most likely correlate with each other. This means that the variance between-groups and within-groups is mixed up (Field, 2018, p. 938-939). The dependency between individual observations can be estimated with the intra-class correlation (ICC) (ibid.). The ICC shows the proportion of the total variability in the dependent variable that is attributable to the higher-level variable, i.e. the country-wave combinations (ibid.). If the country-wave combination has a large effect on their support for wealth redistribution, the ICC will be high (ibid.).

When the values of the dependent variable correlate within a group, this has two important statistical consequences. First, the coefficients might be biased. Moreover, and more importantly, the standard errors will be estimated downwards (Hox, 2002, p. 3). If the estimated standard errors are smaller than they should be, this leads to an increase in making a Type I error: the null-hypothesis that there is no effect is falsely rejected (ibid.). Besides these statistical problems, there are also conceptual problems, as the results are most likely not correctly interpreted (ibid., p. 3-4).

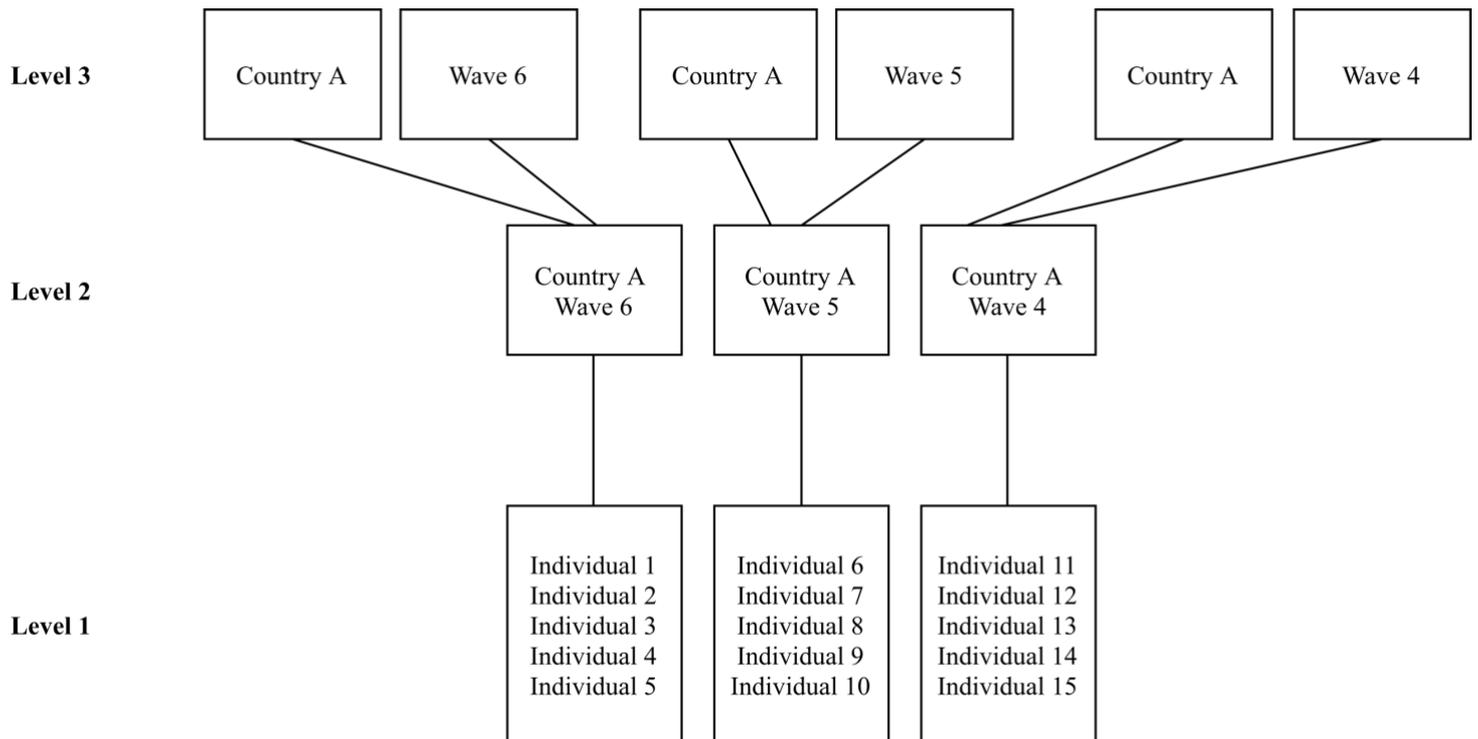
To account for the issue of within- and between-groups variance, a multilevel regression analysis will be used. Here, cross-sectional data on more than one level is being analysed. Multilevel regression models are designed to simultaneously analyse variables from different levels, i.e. individual- and country-wave-level. Therefore, this model properly includes various dependencies. An advantage of using multilevel models is that these models allow for ‘causal heterogeneity’, meaning that the effect of the independent variable on the dependent variable can vary across groups.

There are different kinds of multilevel models, which are extensively explained in Appendix F.2. For example, there are models in which the intercepts are random, but the slopes are fixed. Here, it is assumed that the effect of the independent variable on the dependent variable is the same in all groups (Field, 2013, p. 821-823). Furthermore, a random intercept, random slope model can be estimated. This model allows for causal heterogeneity: the effect of the independent variable on the dependent variable can vary across groups (*ibid.*). Using this model allows me to test cross-level interaction effects, when the effect of a micro-variable on the dependent variable is influenced by a macro-level variable (*ibid.*). In chapter 4, I will extensively explain which models I used to properly estimate the hypotheses.

### **3.5.3 Data structuring and centring**

When using nested data, it is important to include all random effects at all levels that could be potentially relevant (Schmidt-Catran & Fairbrother, 2016). If some random effects are ignored, this could lead to downward estimations of the standard errors (*ibid.*). Therefore, I first assume that respondents are nested in country-wave combinations. These country-wave combinations are, in turn, treated as cross-classified within countries and waves. Although this cross-classified three-level structure is seldomly used in comparative longitudinal survey data, this is the full and most complete model (*ibid.*). If I would use a three-level model in which respondents are nested in country-wave combinations and these country-wave combinations are only nested in countries, I would ignore the potential variance of wave. If there is random variation between waves, which is highly possible, the model would estimate biased standard errors for all wave-level variables (*ibid.*). Therefore, I have decided to include all potential random effects to estimate the most complete model. This three-level model is also graphically displayed in Figure 3.2.

**Figure 3.2: Three-level hierarchical data structure used in analyses (own work)**



Moreover, it is useful to centre the data. Centring the data is done by subtracting the mean of a variable from all the individual values of a variable. For micro-level variables, this can be done by group-mean centring. Here, the mean of the group is subtracted from all values of a variable in that group (Field, 2013, p. 829). In this research, the different groups are the different country-wave combinations. For macro-level variables, centring can be done by using grand-mean centring. Here, the overall mean is subtracted from each value (ibid., p. 829-830).

Centring is useful to do in all multilevel models, because it corrects for the fact that the values of the intercepts of the independent variables are influenced by the scale of the variables (Field, 2013, p. 829). Moreover, it is better to replace the value of zero by the mean, since a value of zero often does not exist or is not meaningful. For example, it is not valuable to know the predicted value for the dependent variable when someone is 0 years old. Using the mean age instead will give more information. I will therefore mean centre all the variables that are included in the different models, including the control variables.

## **Chapter 4: Analysis**

In this chapter, the hypotheses formulated in chapter 2 are tested. I will start with presenting the descriptive statistics. After this, I will discuss how individual support for wealth redistribution and income inequality varies within and between countries. Then, different multilevel null models will be compared to support the claim that multilevel regression is the appropriate research method. After this, hypotheses will be answered by using the appropriate models. After this, I will describe the different robustness checks I conducted. The chapter will end with a recap and overview of the answers on all hypotheses.

### **4.1 Descriptive analysis**

In Table 4.1, an overview of the descriptive statistics on all operationalized variables is presented. For all variables, the valid number of observations (N) is presented. For the ratio- and interval- measurement level variables, the minimum, maximum, mean and standard deviation can be found. For the categorical variables, the number of observations for each category and its percentage is displayed.

Looking at the micro-level variables, we see that most respondents are around 38 years old. This means that the sample contains a relatively young population. This might bias the results of the hypothesis in which the effect of age is tested. For the level of education, we see that all three groups of education are highly represented. Low education constitutes the largest group with 38.78%. The macro-level variable of this research is income inequality, measured with the Gini-coefficient. The values range from 41 to 59.8, with a mean-value of 50.57. Looking at the control-variables, we see that gender is quite equally distributed. There are also three macro-level control variables included, which mean-values can be found in Table 4.1.

Considering the number of valid observations in the dataset, there is a sizable amount of missing values for post-materialism and income inequality. The main reason for missing values on the post-materialist values index is that respondents were not asked all, or a part of the six questions that constitute the index in the survey. Therefore, they were not able to answer the question and their index was not calculated. However, there are also structural missing values for three country-wave combinations. The reason for missing values on the Gini-coefficient is that income inequality was not measured in some countries for some years. An overview of the country-wave combinations in which the Gini-coefficient or the post-material values index were not measured can be found in Appendix G. These missing country-wave combinations are not included in the analyses where these variables are included.

**Table 4.1: Descriptive statistics of all operationalized variables**

<i>Variable</i>	<i>Valid N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean / %</i>	<i>Standard Deviation</i>
<i>Dependent variable</i>					
Support for wealth redistribution	46265	1	10	5.268	3.243
<i>Micro-level variables</i>					
Income	46210	1	10	4.152	2.380
Age	50373	16	99	38.693	15.433
Education level	45347				
Low education (reference)	17585			38.780%	
Middle education	11686			25.780%	
High education	16073			35.440%	
Post-materialist index	37430	0	5	2.275	0.437
Political trust	43903	1	4	2.258	0.952
<i>Macro-level variables</i>					
Income inequality	35448	41	59.800	50.570	4.350
<i>Control variables</i>					
Gender	50373				
Male	24331			48.300%	
Female (reference)	26042			51.700%	
Ethnic fractionalization	48911	0.111	0.647	0.491	0.178
GDP per capita	50397	1872.737	15351.550	5642.752	3353.290
Net migration rate	50397	-2251292.000	319820.000	-362556.700	643127.800

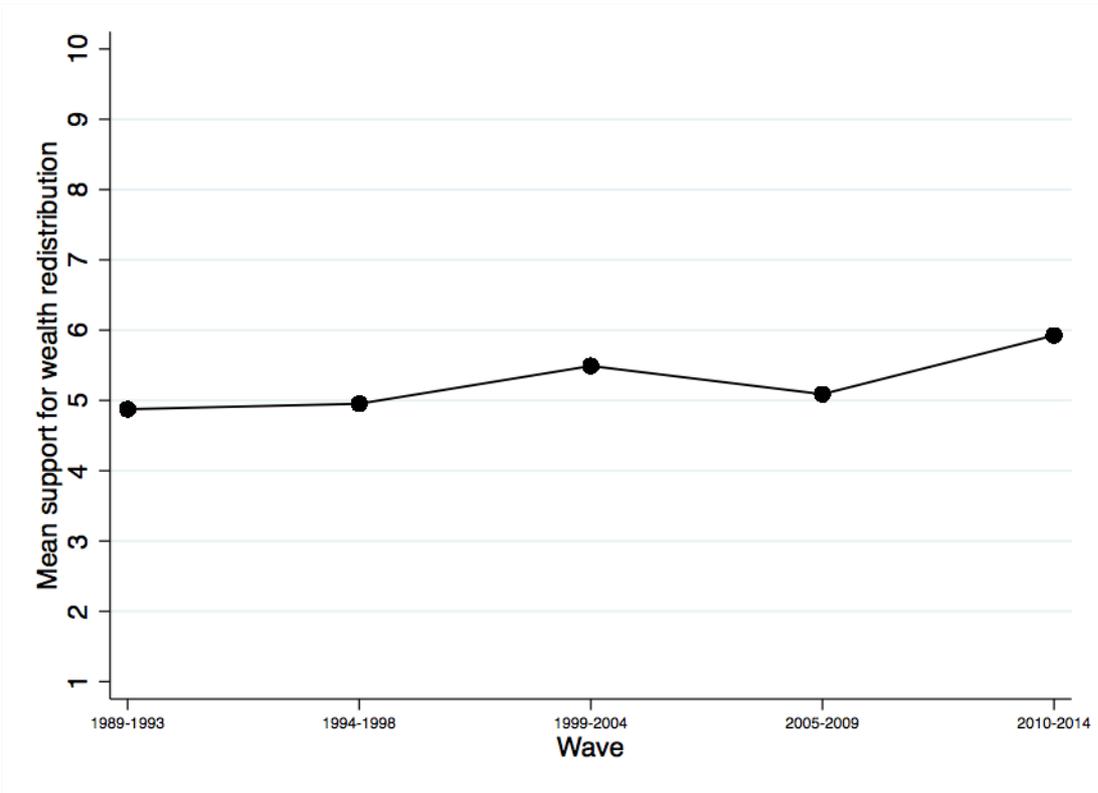
Source: Aggregated WVS data-file, 1990-2014

## 4.2 Support for wealth redistribution over the period 1990-2014

Before the hypotheses are tested, it is important to gain more knowledge on how support for wealth redistribution has varied over the period 1990-2014, both within and between countries.

First of all, it is interesting to see how support for wealth redistribution has varied over the different survey-waves. This is visualized in Figure 4.1. A table with the exact mean-values per wave can be found in Appendix H. One can see that the mean value of support for wealth redistribution has slightly increased over the years. In wave 5 (2005-2009), however, support for wealth redistribution had a small dip. Generally speaking, the mean-value of support for wealth redistribution is around the centre of the scale, as the mean-value for all waves is just below or above 5.

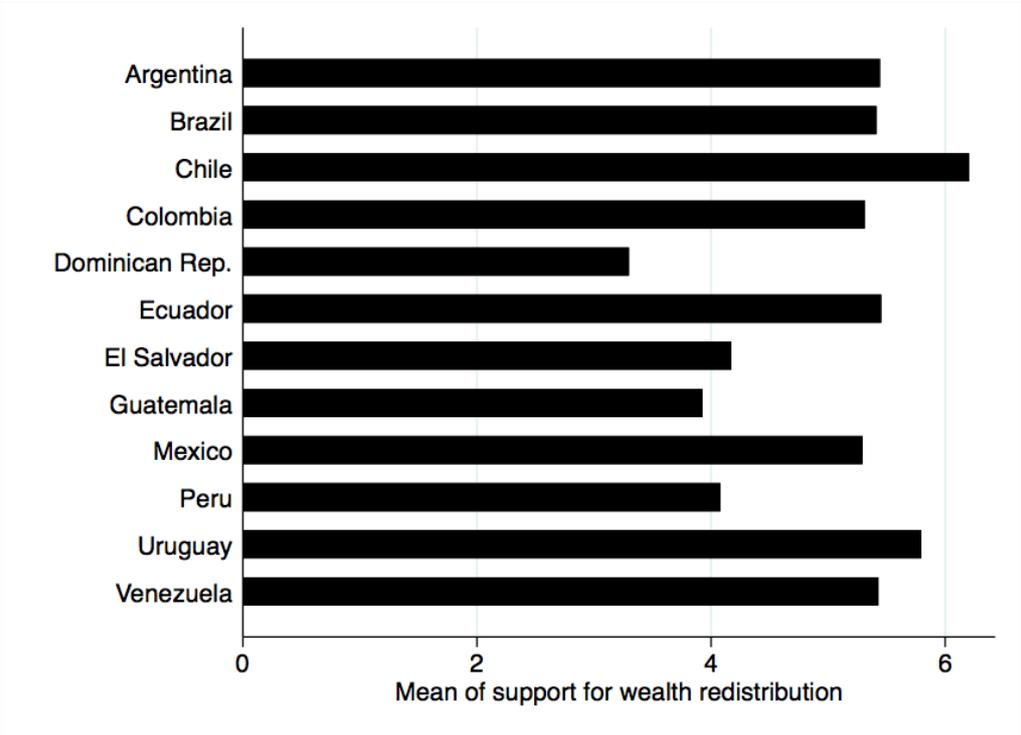
**Figure 4.1: Mean value of support for wealth redistribution in 12 Latin-American countries over the period 1990-2014 per survey-wave**



Source: Aggregated WVS data-file, 1990-2014

Second, it is interesting to show how support for wealth redistribution differs between countries. Figure 4.2 therefore contains an overview on how support for wealth redistribution varies across countries. The exact values are also presented in Appendix H. The lowest mean-value of support for wealth redistribution is reported in the Dominican Republic (3.299). Support for wealth redistribution is the highest in Chile, with a mean-value of 6.206. These differences between countries already indicate that country-level differences should be considered when analysing support for wealth redistribution. This claim will be statistically tested in the next paragraph.

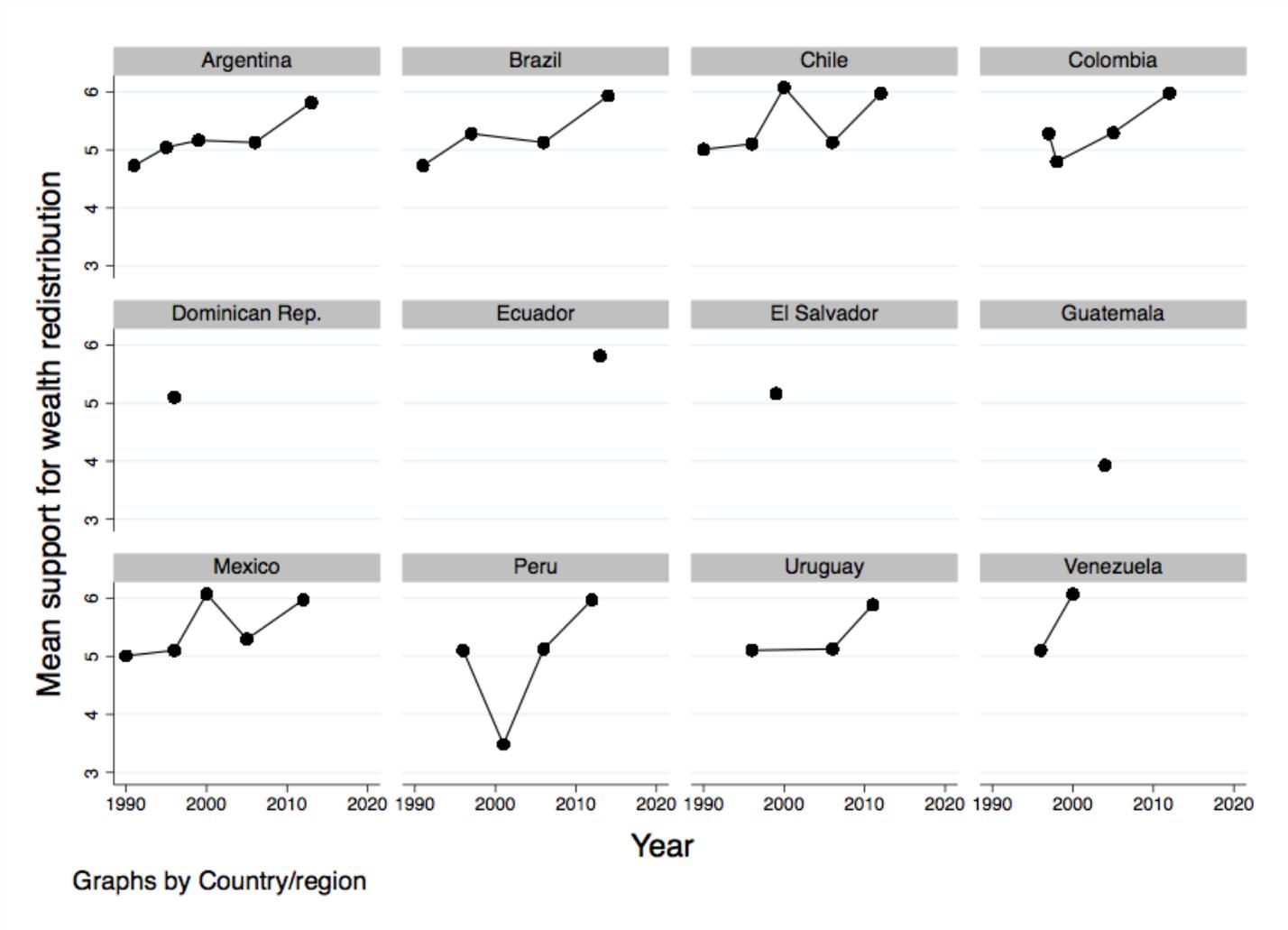
**Figure 4.2: Mean of support for wealth redistribution per Latin-American country over the period 1990-2014**



Source: Aggregated WVS data-file, 1990-2014

Additionally, Figure 4.3 visualizes how support for wealth redistribution has varied over the years per country. For most countries, the overall trend is an increase in support for wealth redistribution over the years. However, we see that in Peru, there was a large decrease in support for wealth redistribution between 1990 and 2000. Looking at the political situation in Peru around that time, one can speculate that this dip can be explained by the Shining Path insurgency and the corruption and human rights violations of president Alberto Fujimori (Conaghan, 2005, p. 1). When Fujimori fled to Japan, support for wealth redistribution increased again in this country (ibid.). There are also a few countries with only one time-points. For these countries, it is not possible to say anything meaningful about the time-pattern of support for wealth redistribution.

**Figure 4.3: Mean value of support for wealth redistribution in 12 Latin-American countries over the period from 1990 to 2014 per country**



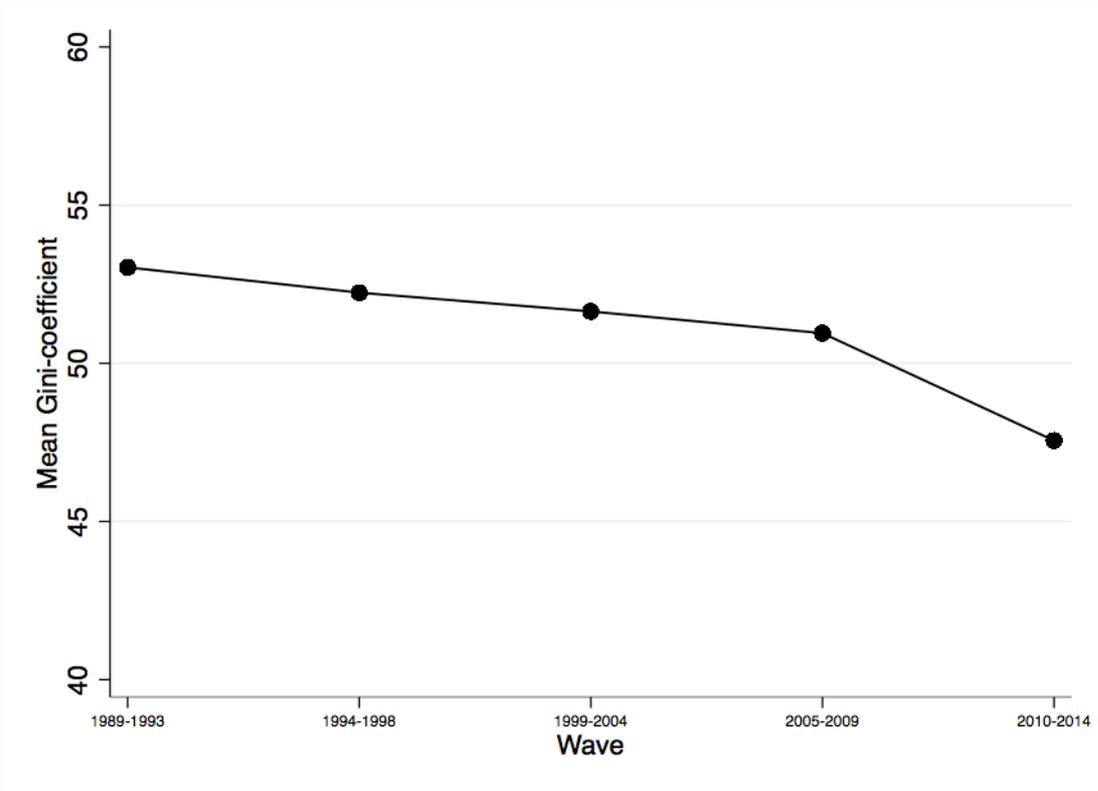
Source: Aggregated WVS data-file, 1990-2014

**4.3 Income and income inequality over the period 1990-2014**

Since I will primarily focus on the impact of income and income inequality on support for wealth redistribution, it is valuable to see how the main independent variables have varied over the years in Latin-American countries. Therefore, I will first present some additional descriptive information on income inequality. I have chosen to only give additional descriptive statistics of income inequality, since income inequality automatically captures the individual differences in income.

First, with regards to income inequality, one can see in Figure 4.4 that the Gini-coefficient slightly decreased over the period of 1990-2014. In wave 2 (1989-1993), the mean-value of the Gini-coefficient was the largest with a value of 53.035, in wave 6 (2010-2014) the mean-value was the lowest with a value of 47.556.

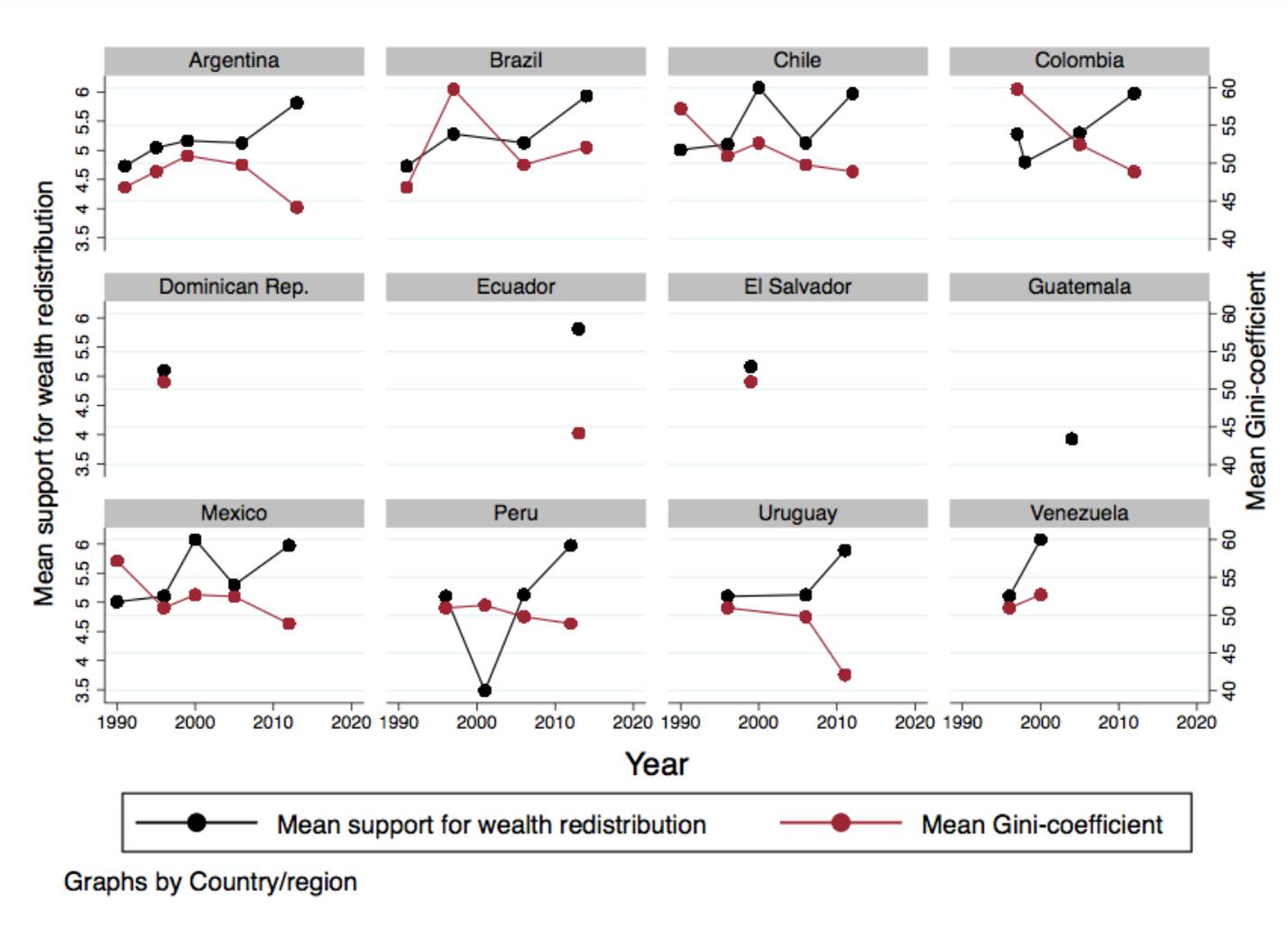
**Figure 4.4: Mean value of income inequality in 12 Latin-American countries over the period 1990-2014 per survey-wave**



Source: Aggregated WVS data-file, 1990-2014

Furthermore, it is valuable to see how income inequality has varied in comparison with how support for wealth redistribution has varied over the years per country. This is visualized in Figure 4.5. For some countries, for example Uruguay, we see a decline in income inequality in recent years. For Uruguay, this can partially be explained by taxation that favours people with the lowest income-level (Burdín et al., 2014). Generally speaking, one can see that a decrease in income inequality corresponds with an increase in support for wealth redistribution. Nevertheless, income inequality remains high in each Latin American country, compared with the rest of the world (The World Bank, 2019a). For some countries, only limited information is available. As a consequence, it is not possible to say anything meaningful about the time-pattern of income inequality and support for wealth redistribution for these countries.

**Figure 4.5: Mean value of income inequality and support for wealth redistribution in 12 Latin-American countries over the period from 1990 to 2014 per country**



Source: Aggregated WVS data-file, 1990-2014

**4.4 Null models**

In the previous chapter, I have argued why using multilevel regression would be appropriate to use, as I use nested data. This claim has to be empirically tested as well. I will do this by estimating a one-, two- and three-level model. To compare these models, a likelihood ratio test will be conducted. Generally speaking, a higher log-likelihood indicates that more variance is explained in the model. To test if the model with a higher log-likelihood, i.e. a less negative log-likelihood, fits better than the model with a lower log-likelihood, a chi-square test ( $\chi^2$ ) is performed. The results of all the models are presented in Table 4.2.

First, the two-level null model is compared with the one-level null model. The latter is equal to an ordinary linear regression model. The two-level null model assumes that respondents are nested in country-wave combinations. The difference between the log-likelihoods of the models is 1506.5 with a corresponding  $\chi^2$  of 3012.98 ( $p < .001$ ). This proves that the two-level model does significantly better

fit the observed values than the one level model. The intraclass correlation (ICC) of the two-level model is 0.078, which means that around 7.8% of all the variance of support for wealth redistribution is explained by the country-wave level.

Second, the two-level null model is compared with the three-level cross-classified null model. The three-level model assumes that respondents are nested in country-wave combinations and that these country-waves combinations in turn are nested in both countries and waves. The difference in log-likelihoods between the two-level model and the three-level cross-classified model is 6.80, with a corresponding  $\chi^2$  of 13.60 ( $p = .001$ ). We can therefore conclude that the cross-classified three-level model is a significantly better fit than the two-level model. In this model, the ICC for respondents nested in country-wave combinations is 0.081, meaning that 8.1% of all variance is explained by the country-wave respondents live in.

To conclude, there is empirical, statistical support to use multilevel modelling. More specifically, the three-level modelling approach fits the data best. Here, respondents are nested in country-wave combinations and these country-wave combinations are in turn nested in both countries and waves. This model will therefore be used when multilevel regression models are estimated.

**Table 4.2: Comparison of one-, two-, and three-level null models of support for wealth redistribution**

	One-level null model	Two-level null model	Three-level null model
	B	B	B
Constant	5.268*** (0.015)	5.275*** (0.155)	5.030*** (0.317)
Total N	46265	46265	46265
Level-2 N		35	35
Level-3 N countries			12
Level-3 N waves			5
Log-likelihood	-120074.390	-118567.890	-118561.090
Variance within country-wave (level 1)	10.515	9.818	9.818
Country-wave variance (level 2)		0.831	0.231
Country variance (level 3)			0.509
Wave variance (level 3)			0.235

\* =  $p < .1$ , \*\* =  $p < .05$ , \*\*\* =  $p < .01$  (two-tailed)

B unstandardized coefficient

Standard errors in parentheses under the unstandardized coefficients

Source: Aggregated WVS data-file, 1990-2014

## **4.5 Modelling approach**

### **4.5.1 Fixed-effects model**

To test the micro-level hypotheses, including micro-level interaction hypotheses, fixed-effects models are used. These models are appropriate to use for the micro-level hypotheses, as no macro-level variables are included. To control for all variation between the different country-wave combinations, country-wave dummies were used. These country-wave dummies automatically control for all the macro-level variance. Therefore, using a fixed-effects model is very robust. As reference category Peru wave 6 was chosen, as this country-wave combination has a mean-value closest to the mean-value for support for wealth redistribution. The overall mean is 5.268, and the mean for Peru wave 6 is 5.266. Besides country-wave dummies, gender was included as control variable in all the analyses. Since most models consist of multiple variables, it is important to first test if these variables do not correlate too much to each other. This is tested by conducting a multi-collinearity test by estimating variance inflation factors scores (VIF-scores). The VIF-scores of all variables and the correlation table can be found in Appendix I. The mean VIF-score is 1.28. There are different interpretations about which value of the VIF-score indicates problems of multicollinearity (Field, 2013, p. 325). Since all the reported VIF-scores are below a value of 2, I conclude that there are no problems of multicollinearity, as these values are even tolerated by the strict interpretations of the VIF-score (ibid.).

### **4.5.2 Random intercept random slope models**

In order to test the cross-level interaction hypothesis, random intercept random slope models were used. In these models, the intercepts and the slope effects of the independent variables are allowed to vary. This is valuable to use, as a cross-level interaction hypothesis predicts that a macro-level variable strengthens or weakens the effect of a micro-level predictor on support for wealth redistribution. In these models, the control variables were also gradually included<sup>7</sup>.

### **4.5.3 Alpha**

The probability values represent the probability of finding an estimation if the null-hypothesis that there is no effect is true (Field, 2013, p. 61). A probability value of five percent is often used (ibid.). However, I will support the alternative hypothesis that there is an effect with a maximum alpha-value of ten percent. This higher alpha is deliberately chosen, given the high complexity of the estimated models.

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<sup>7</sup> In the random intercept random slope models, the control variables GDP per capita, ethnic fractionalization and gender were included. The last control variable, net migration rates, was first included in the analyses, but due to measurement problems later removed from the analysis. Since the estimates for this variable were very low, I assumed that this would not lead to significant changes.

To compensate for this complexity, an alpha of ten percent will be used when interpreting the results. The results that are significant at the ten percent level will be reported as marginally significant.

## **4.6 Explanatory analysis**

### **4.6.1 Micro-level hypotheses**

The estimates for the micro-level effects on support for wealth redistribution can be found in Table 4.3. All models are estimated with a fixed effects model. In the first six models, the micro-level hypotheses are estimated one-by-one. Model 1 tests if income has an effect on support for wealth redistribution. Model 2 until model 6 test the micro-level interaction hypotheses one-by-one. These models estimate which variables moderate the relationship between income and support for wealth redistribution. In model 7, all micro-level variables are included. To ensure comparability with the other models (model 8 – 9), the log-likelihood was reported instead of the  $R^2$ . After the presentation of the models, the results will be explained. In all these explanations, the reported results in model 7 are the results controlled for the effect the other independent variables and gender as control variable.

**Table 4.3: Country-wave fixed-effects of micro-level effects on support for wealth redistribution between 1990-2014**

Model	M1	M2	M3	M4	M5	M6	M7
	B	B	B	B	B	B	B
Intercept	5.993*** (0.098)	5.290*** (0.093)	5.506*** (0.098)	5.499*** (0.098)	5.229*** (0.097)	5.310*** (0.094)	5.439*** (0.103)
Income (centred)	-0.150*** (0.007)	-0.149*** (0.007)	-0.142*** (0.014)	-0.140*** (0.015)	-0.156*** (0.008)	-0.152*** (0.007)	-0.138*** (0.016)
Age (centered)		0.001 (0.001)		0.002 (0.002)			0.003 (0.002)
Education							
Low			Reference	Reference			Reference
Middle			-0.219*** (0.044)	-0.250*** (0.045)			-0.217*** (0.050)
High			-0.420*** (0.032)	-0.438*** (0.044)			-0.404*** (0.051)
Post-materialism (centred)					0.016 (0.015)		0.052*** (0.016)
Political trust (centred)						-0.003 (0.018)	-0.018 (0.020)
Income * Age		-0.001** (0.000)		-0.000 (0.001)			-0.000 (0.001)
Income * Middle education			0.021 (0.021)	0.018 (0.022)			0.012 (0.024)
Income * High education			0.058*** (0.018)	0.064*** (0.019)			0.040* (0.022)

*Continuation of Table 4.3*

Income * Age * Middle education								-0.000 (0.003)	-0.008 (0.001)		
Income * Age * High Education								-0.002* (0.001)	0.001 (0.001)		
Income * Post-materialism									0.027*** (0.007)	0.023*** (0.007)	
Income * Political trust										-0.017** (0.008)	-0.016* (0.009)
Gender (control)											
Male	-0.048 (0.030)	-0.049 (0.030)	-0.045 (0.032)	-0.045 (0.032)	-0.038 (0.034)	-0.070** (0.033)	-0.057 (0.037)				
Female	Reference	Reference	Reference	Reference	Reference	Reference	Reference				
<i>Additional information</i>											
Log-likelihood	-108185.640	-108164.310	-97090.335	-97057.876	-85829.114	-93528.258	-71475.134				
Wald Chi-Square (df)	3597.180 (35)	3604.360 (37)	3431.790 (36)	3470.180 (42)	3269.960 (34)	3312.160 (34)	3063.940 (42)				
Total N	42404	42398	38076	38071	33766	36628	28178				

All these models were estimated with country-wave fixed-effects models with Peru wave 6 as reference category

\* =  $p < .1$ , \*\* =  $p < .05$ , \*\*\* =  $p < .01$  (two-tailed)

B unstandardized coefficient

Standard errors in parentheses under the unstandardized coefficients

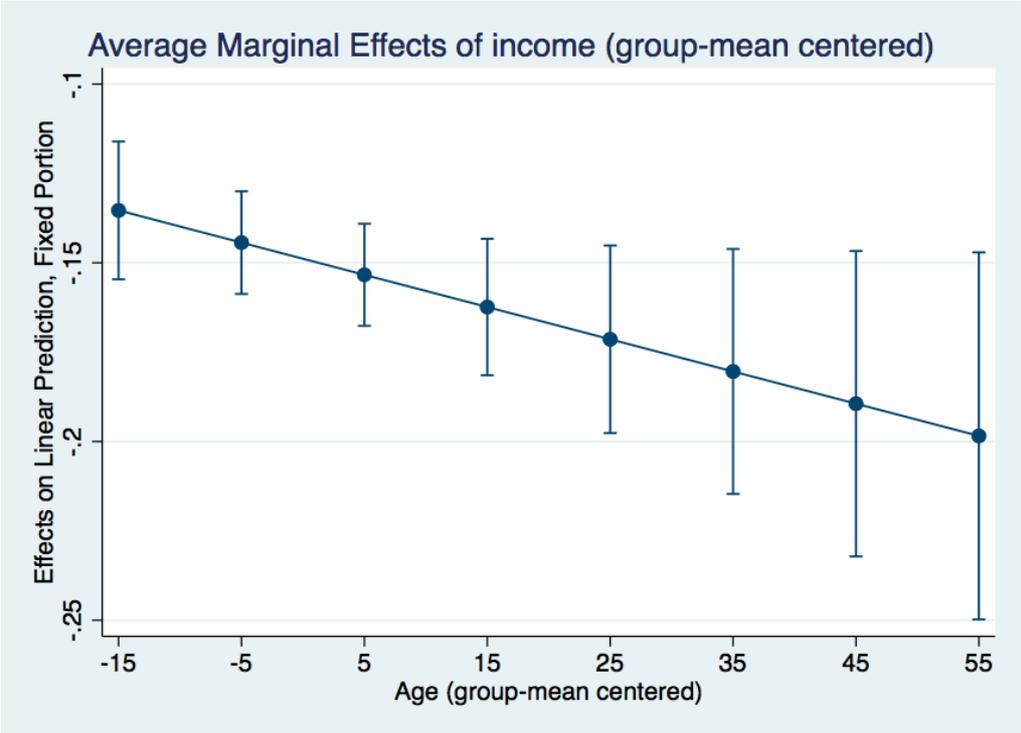
The micro-level variables are group-mean centred

Source: Aggregated WVS data-file, 1990-2014

In hypothesis 1, it was predicted that *the higher an individual's income is, the less they support wealth redistribution policies*. Looking at the results of model 1, there is strong support for this hypothesis. If an individual's income increases with one decile, his/her support for wealth redistribution decreases with 0.150 points ( $p < .001$ ), controlling for the effects of gender. When looking at model 7, where all micro-level variables were included, we see a slight decrease in the magnitude of the effect compared with the estimates of model 1. This can be explained by the inclusion of extra variables in the model, which explain some of the variance of income. However, the effect of income is still highly significant in the expected direction. These findings give preliminary support for the hypothesis. After the presentation of the cross-level interaction hypothesis, a final conclusion on the hypothesis will be presented.

In hypothesis 3, I expected that *the older an individual is, the stronger is the effect of income on support for wealth redistribution*. The results for this hypothesis are presented in model 2 and model 7. In model 2, the interaction effect between age and income is significant ( $p = 0.050$ ). Every one-year older an individual becomes, the slope-coefficient of the effect of income on support for wealth redistribution decreases with 0.001 points. In other words, the effect of income becomes stronger (i.e. more negative) if an individual gets older. This is also visualized in Figure 4.6. On the Y-axis, the effect of income on support for wealth redistribution is visualized. One can see that this effect becomes stronger for older people. Please note that the values of age are group-mean centred. The results of model 2 are in line with the hypothesized effect.

**Figure 4.6: Predicted effect of income on support for wealth redistribution at different ages**

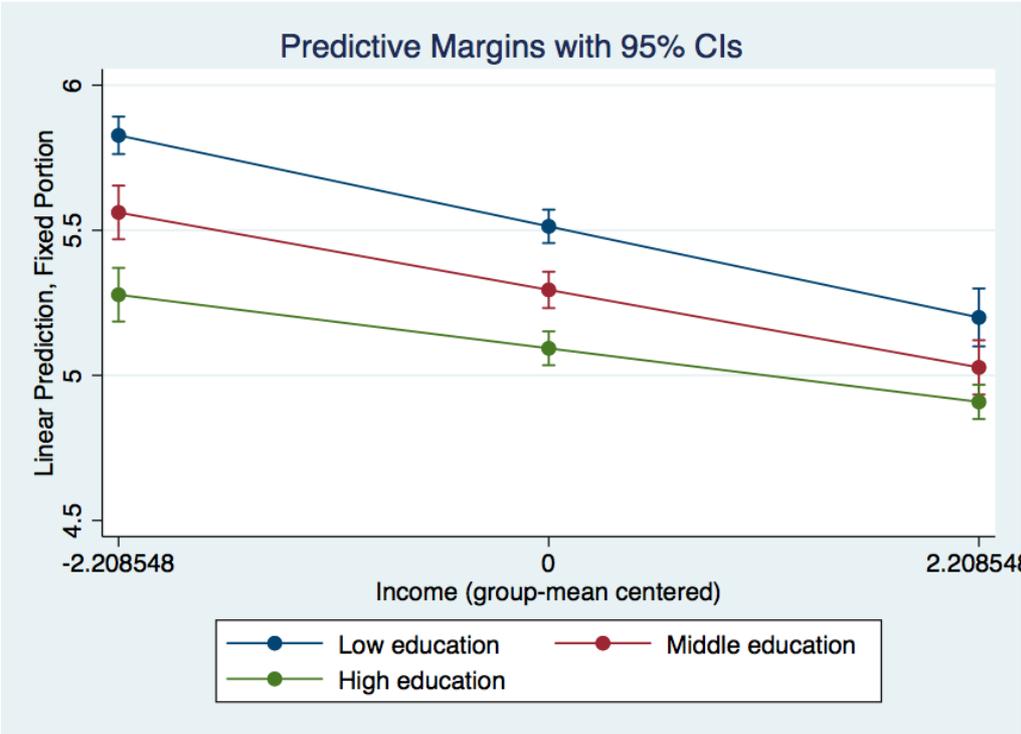


Source: Aggregated WVS data-file, 1990-2014

When looking at model 7, where all the micro-level variables are included, the effect of the interaction-term disappears. Therefore, I conclude that there is partial support for hypothesis 3, as the interaction-effect is significant in model 2, but disappears in model 7.

In hypothesis 4, it was expected that *the higher an individual's education level is, the weaker is the effect of income on support for wealth redistribution*. This hypothesis is tested in model 3 and 7. In model 7, we see that the predicted value of support for wealth redistribution is 0.217 points lower for middle-educated people with an average income-level and 0.404 points lower for highly-educated people with an average income-level. Moreover, there is a significant interaction-term between high-levels of education and income at the ten percent level ( $p = 0.068$ ). If someone is highly educated instead of poorly educated, this increases the effect of income on support for wealth redistribution with 0.040 points. In other words, the effect of income on support for wealth redistribution is weaker for highly-educated people, in line with the expectations. This moderating effect of education is also visualized in Figure 4.7. Here we see that for all levels of education, support for wealth redistribution decreases when income increases. Moreover, we see that lower educated people have a higher support for wealth redistribution, while highly educated people have a lower support for wealth redistribution. For middle-levels of education no significant effect was found. Therefore, I conclude that there is partial support for the hypothesis.

**Figure 4.7: Predicted effect of income on support for wealth redistribution at different levels of education**

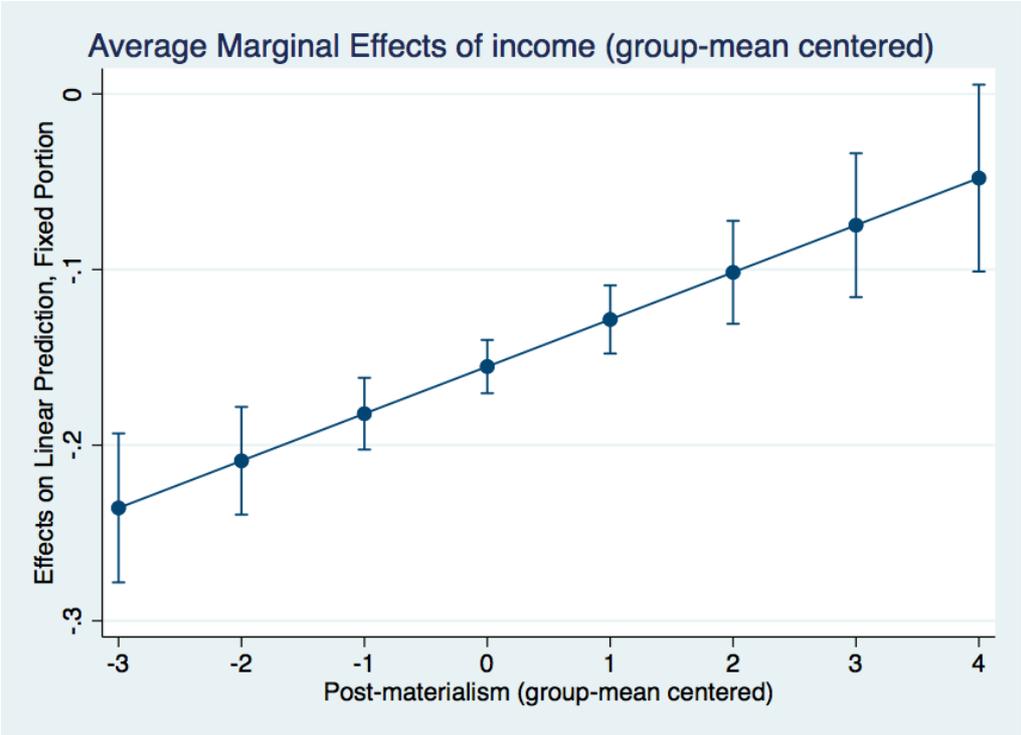


Source: Aggregated WVS data-file, 1990-2014

In hypothesis 5, the expectation was that *the higher an individual's education level and the younger an individual is, the weaker is the effect of income on support for wealth redistribution*. This three-way interaction hypothesis is estimated in model 4 and in model 7. In these models, it is tested if the effect of income on support for wealth redistribution does not only depend on someone's level of education, but also on someone's age. This is tested by including two moderators in the interaction-term: education and age. If the three-way interaction-term is significant, this means that the two-way interaction between income and education depends on the level of the higher order moderator: age. The three-way interaction-term for the effect of middle education is not significant. The three-way interaction-term for the effect of high education is marginally significant in model 4 ( $p = 0.079$ ) in model 4, but when the other variables are included in model 7, the effect disappears. Moreover, the effect of the interaction term is really small with a coefficient of 0.001. Therefore, I conclude that there is no support for hypothesis 5.

In hypothesis 6, I expected that *the more post-materialist values an individual holds, the weaker is the effect of income on support for wealth redistribution*. The results for this hypothesis are estimated in model 5 and 7. Both models show a significant, positive interaction-effect. In model 7, for every point that individuals have more post-materialist values, the slope-coefficient of the effect of income on support for wealth redistribution increases with 0.023 points ( $p = 0.002$ ). In other words, if an individual has more post-materialist values, the effect of income on support for wealth redistribution becomes less strong. This interaction-effect is also visualized in Figure 4.8. Here, the values of post-materialism are group-mean centred and the Y-axis visualizes the effect of income on support for wealth redistribution. These findings give strong support for hypothesis 6.

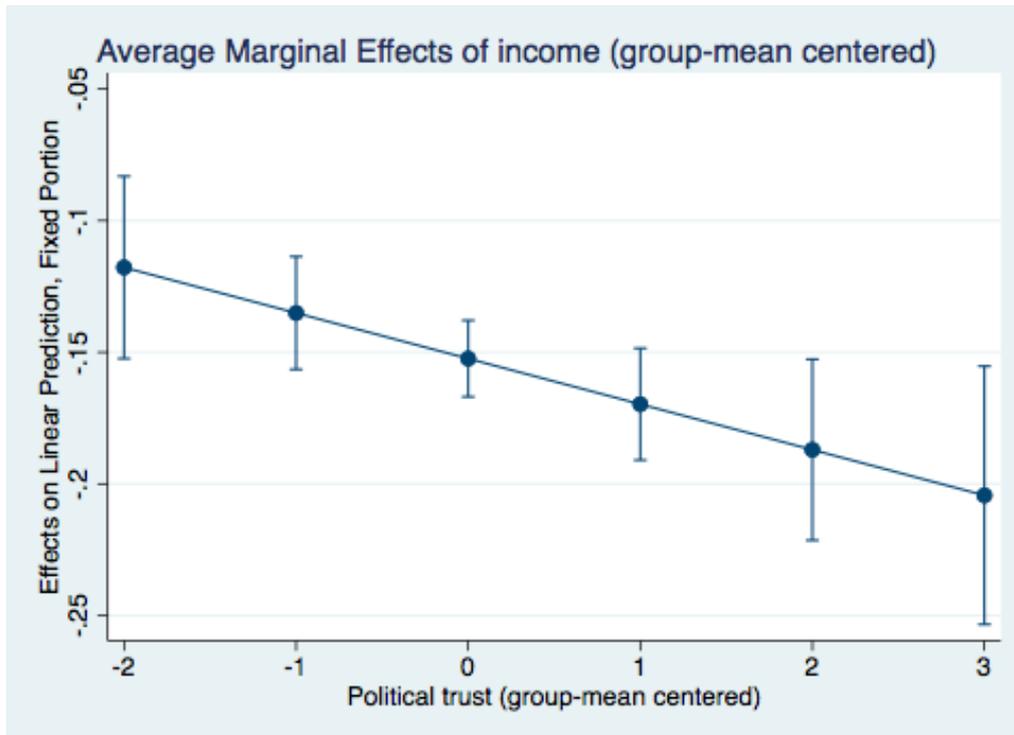
**Figure 4.8: Predicted effect of income on support for wealth redistribution at different levels of post-materialism**



Source: Aggregated WVS data-file, 1990-2014

Finally, in hypothesis 7, it was expected that *the higher the individual’s level of political trust is, the weaker is the effect of income on support for wealth redistribution*. The results for this hypothesis are estimated in model 6 and 7. In model 6, for every one-point increase in political trust, the slope-coefficient of the effect of income on support for wealth redistribution decreases with 0.017 points ( $p = 0.030$ ). In other words, the effect of income becomes stronger (i.e. more negative) if an individual has more political trust. This effect is also visualized in Figure 4.9. These results are not in line with the hypothesis, as it was expected that higher levels of political trust weaken, instead of strengthen, the effect of income on support for wealth redistribution. These estimates show the opposite direction. The interaction-term becomes a little bit smaller (-0.016), but remains marginally significant in model 7 ( $p = 0.084$ ) in model 7. Since the results are in the opposite direction as expected, I conclude that hypothesis 7 is rejected.

**Figure 4.9: Predicted effect of income on support for wealth redistribution at different levels of political trust**



Source: Aggregated WVS data-file, 1990-2014

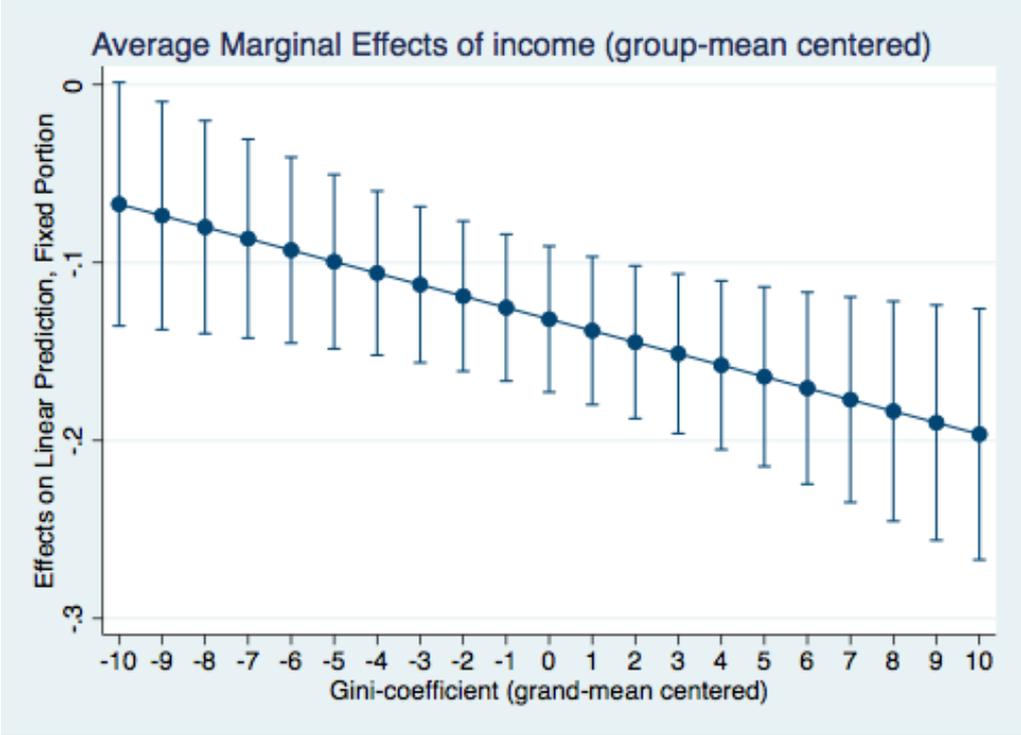
#### 4.6.2 Cross-level two-way interaction hypothesis

In order to test the cross-level interaction hypothesis, I estimated random intercept random slope models with a three-level cross-classified nesting structure. In hypothesis 2, I predicted that *the higher the national level of income inequality in a country is, the stronger is the effect of individual's income on support for wealth redistribution*. The results for the estimations for this hypothesis with and without control-variables can be found in Table 4.4. These models are also used to find additional support for hypothesis 1. In both models, the effect of income on support for wealth redistribution is still highly significant ( $p < .001$ ). In model 9, for every 1 decile increase in income on the scale, support for wealth redistribution decreases with 0.134 points for average levels of income inequality, controlling for the effect of the other variables in the model. These results, combined with the results of model 1-7, give strong support for hypothesis 1.

Looking at hypothesis 2, the interaction-term demonstrates that the effect of income on support for wealth redistribution is moderated by the level of income inequality in a country. In model 8, for every one-point increase in income inequality, the slope-coefficient of the effect of income on support for wealth redistribution decreases with 0.006 points ( $p = 0.024$ ). This means that the effect of income becomes stronger (i.e. more negative) if an individual lives in a country with a higher level of income inequality. This is also visualized in Figure 4.10. Here we see that the predicted effects of income become stronger (i.e. more negative) when the Gini-coefficient increases. The interaction-term

decreases a little bit when control variables are included in model 9 (-0.005), but remains marginally significant ( $p = 0.067$ ). The small change in the coefficient can most likely be explained by the inclusion of GDP per capita in the empirical model, which was expected to correlate with income inequality (Brueckner & Lederman, 2018). Overall, I conclude that there is enough evidence to support hypothesis 2.

**Figure 4.10: Predicted effect of income on support for wealth redistribution at different levels of income inequality**



Source: Aggregated WVS data-file, 1990-2014

**Table 4.4: Random intercept random slope models of cross-level interaction effect income and income inequality**

Model	M8	M9
	B	B
<i>Fixed effects</i>		
Intercept	4.958*** (0.390)	5.167*** (0.163)
Income (centred)	-0.123*** (0.021)	-0.134*** (0.019)
Gini-coefficient (centred)	-0.044 (0.038)	0.067* (0.040)
Income * Gini-coefficient	-0.006** (0.003)	-0.005* (0.003)
GDP per capita (control)		0.000*** (0.000)
Ethnic fractionalization (control)		-0.297 (0.894)
Gender (control)		
Male		-0.078** (0.036)
Female		Reference
<i>Random effects</i>		
Country-wave variance (level-2)	0.144	0.381
Country-variance (level-3)	0.752	0.068
Wave-variance (level-3)	0.331	0.000
Slope variance of income effect	0.003	0.003
Log-likelihood	-80515.398	-76653.756
Wald Chi-Square (df)	45.170 (3)	78.600 (6)
Level-2 N	26	25
Level-3 Country N	10	10
Level-3 Wave N	5	5
Total N	31504	30050

\* =  $p < .1$ , \*\* =  $p < .05$ , \*\*\* =  $p < .01$  (two-tailed)

B unstandardized coefficient

Standard errors in parentheses under the unstandardized coefficients

The micro-level variables are group-mean centred

The macro-level variables are grand-mean centred

Source: Aggregated WVS data-file, 1990-2014

## **4.7 Robustness checks**

In order to check the reliability of the results, I have performed several robustness analyses. All robustness checks will be discussed in the upcoming paragraphs.

### **4.7.1 Random intercept fixed slope models**

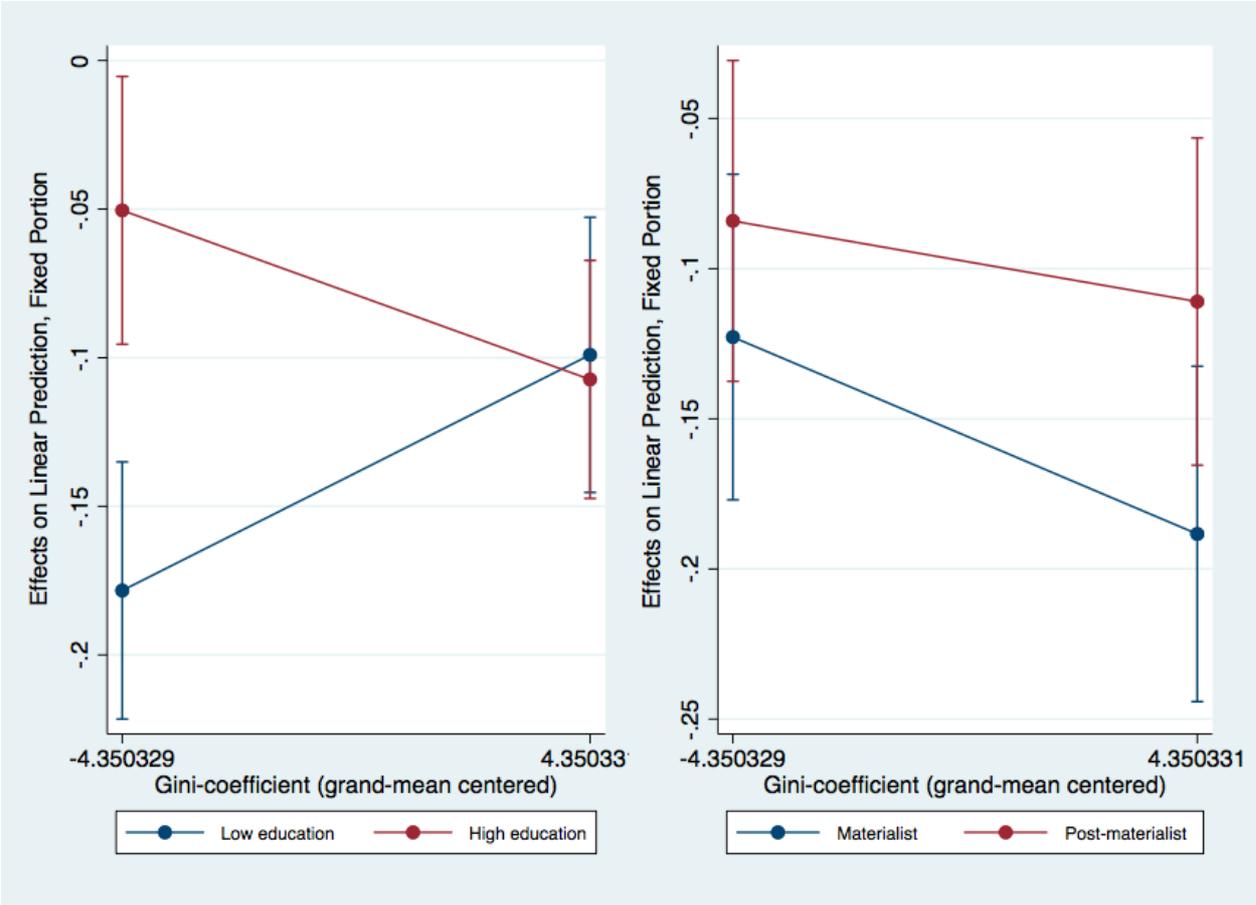
For testing the micro-level hypotheses, I used fixed-effects models. However, another option was the use of random intercept fixed slope models. In these models, the intercept per country-wave combination could differ, but the effect of the slope is the same for all country-wave combinations. The results of these models are presented in Appendix J. Here, all micro-level hypotheses are estimated with a cross-classified three-level nesting multilevel structure. Generally speaking, the results of the micro-level hypotheses do not significantly change when the random intercept fixed slope model is used. The size of some coefficients slightly changes, which can be explained by the fact that in the random intercept fixed slope models only three country-level control variables were included, while in the fixed-effects models all country-variance was captured in country-wave dummies. However, all the significant effects found in the fixed-effects models are also found in the same direction in the random intercept fixed slope models. This supports the aforementioned results.

### **4.7.2 Cross-level three-way interaction hypotheses**

The support for the interaction between income and income inequality (model 8-9) could have profound consequences for the earlier demonstrated two-way micro-level interaction hypotheses. Due to this significant cross-level interaction, it could be the case that the two-way micro-level interactions depend on the level of a higher order moderator: income inequality. To test if this is indeed the case, three-way interaction models were estimated. The results of these estimations can be found Appendix K. Per model, the moderating effect of one independent variable is included. In the last model, model 14, all variables and control-variables and all possible interactions were included. Three-way interaction models were estimated for age, education, and post-materialism. For these variables, partial or full support for the interaction-hypothesis was found. The three-way interaction model for political trust was also included. Although the hypothesis was rejected, a significant effect in the opposite direction was found. Therefore, the three-way interaction-term with income inequality was still valuable to estimate. Hypothesis 5 (three-way interaction age, education and income) was not estimated in this robustness check as four-way interaction with income inequality, as no significant effect was found in the fixed-effects model.

The results of Table K.1 show that for the three-way interaction-term between age, income and income inequality no significant effect was found. This was also the case for the interaction between political trust, income and income inequality. Nevertheless, the three-way interaction-term between high education, income and income inequality is significant with a coefficient of -0.018 ( $p = 0.001$ ) in model 14. This means that income inequality significantly moderates the moderation of high education on the relationship between income and income inequality. For the three-way interaction term between post-materialism, income, and income inequality, a significant effect of 0.004 was found ( $p = 0.032$ ) in model 14. This means that the country's level of income inequality significantly affects the moderating effect of post-materialism on the relationship between income and support for wealth redistribution. Both three-way interactions are visualized in Figure 4.11. On the Y-axis, one can see the effect of income on support for wealth redistribution. One can see that this effect is weaker for highly-educated people and post-materialists. Moreover, Figure 4.11 visualizes how this effect changes when income inequality increases. One can see that for both materialists and post-materialists, a higher level of income inequality strengthens the effect of income on support for wealth redistribution. However, this effect is stronger for materialists than post-materialists. This can be explained by the cultural theory. Post-materialists are less focused on self-interest; therefore, a higher level of income-inequality affects the interaction between post-materialism and support for wealth redistribution less compared with materialists. For highly-educated people, higher income inequality strengthens the effect of income on support for wealth redistribution, but for poorly-educated people the opposite is true: here higher income inequality weakens the effect of income inequality on support for wealth redistribution. Highly- and poorly-educated people are hence differently affected by higher levels of income inequality, which could be explained by their different expectations on the future.

**Figure 4.11: Average marginal effects of income (group-mean centred) on support for wealth redistribution at different levels of income inequality and 1) education or 2) post-materialism**



Source: Aggregated WVS data-file, 1990-2014

**4.7.3 Tobit regression analysis**

The histogram of the dependent variable demonstrated that support for wealth redistribution was not perfectly normally distributed. The histogram indicated left- and right-censoring in the variable. The fact that a lot of people either strongly oppose (score = 1) or support (score = 10) wealth redistribution policies, could have biased the results. To correct for this censoring, tobit regression analysis models for the fixed effects models were estimated. These models are designed to estimate relationships when the dependent variable is censored (McDonald & Moffitt, 1980). In Appendix L, the results with left- and right-censoring are reported. For every model, between 5104 (minimum) and 7953 (maximum) observations were left- or right-wing censored. Although this significantly lowered the number of observations in each model, the coefficients and their significance remain almost the same in all models. This demonstrates that the left- and right-censoring in the dependent variable did not disturb the estimated relationships. Moreover, I also estimated metobit models for the cross-level interaction hypothesis, which corrects for the censoring and fits models with multiple levels of nesting. Since the tobit regression analysis does not works adequately for cross-classified multilevel models, I estimated models in which individuals are nested in country-wave combinations which are nested in countries.

The results are also presented in Appendix L. After removing the left- and right-censored observations, the interaction between income and income inequality remains significant, which makes the earlier estimated relationships more robust.

#### **4.7.4 Different measurement income inequality**

There are different measurements of income inequality, and each measurement has its advantages and disadvantages (Haughton & Khandker, 2009, p. 105-106). As a fourth robustness analysis, I therefore used another measurement of income inequality. Instead of the Gini-coefficient, the results are estimated with the Theil Index, GE(1). The results of the random intercept, random slope models with the Theil Index, GE(1) as measurement of income inequality are presented in Appendix M. Overall, both measurements of income inequality give the same results, as the interaction between income and income inequality remains significant and is in the same direction. However, there are some differences found in 1) the size of the coefficient and 2) the explained variance. These inconsistencies can be explained by two reasons. First, there was only limited data available for the Theil Index, GE(1). Data was only available for the most recent country-wave combinations; therefore, the total number of observations was around 50 percent less for each model. This makes it difficult to compare the Gini-coefficient and the Theil Index, GE(1). Second, the Gini-coefficient and Theil Index do not measure income inequality in exactly the same way. These two differences can explain why small differences in coefficients and variances between the two models are found.

#### **4.7.5 Outliers income inequality**

Moreover, I checked for outliers of income inequality in countries, as these outliers could have potentially influenced the estimations. In Appendix N a spikeplot does not indicate the existence of outliers for the Gini-coefficient. There are no extremely high or low values, as the Gini-coefficient ranges between a value of 40 and 60. Moreover, this is also numerically tested by using the studentized residual, an important measurement to detect outliers (Lund, 1975). This measurement also did not indicate the presence of outliers.

#### **4.7.6 Political trust dummy-measurement**

Finally, in Appendix B, the predicted values of political trust were estimated, after which I decided to treat the variable as quasi-interval. Since the predicted values did not indicate a perfect linear relationship, I estimated a fixed-effects model in which political trust was treated as ordinal variable as robustness-check. The results are presented in Appendix O. The results show an interaction-term in the same direction, which is in line with the results where political trust was treated as if it were of interval level measurement.

#### **4.8 Recap and overview of all hypotheses**

To sum up, there is strong support for hypothesis 1, as the effect of income is highly significant in all models. Moreover, there is also strong support for the interaction-level hypothesis 6. Hypothesis 3 and 4 are partially supported, as age as moderating variable is not significant in all models and because only significant levels for high levels of education are found. Hypothesis 5 is not supported, as the three-way interaction between income, age, and education was not significant. Hypothesis 7 is rejected, as the significant interaction-term of political trust shows a relationship in the opposite direction as expected. Finally, the cross-level interaction hypothesis 2 is supported. An overview of the hypotheses and the results can be found in Table 4.5.

**Table 4.5: Overview and conclusion of all hypotheses**

<i>Hypothesis</i>	<i>Conclusion</i>
<b>H1:</b> The higher an individual's income is, the less they support wealth redistribution policies.	Supported
<b>H2:</b> The higher the national level of income inequality in a country is, the stronger is the effect of individual's income on support for wealth redistribution.	Supported
<b>H3:</b> The older an individual is, the stronger is the effect of income on support for wealth redistribution.	Partially supported
<b>H4:</b> The higher an individual's education level is, the weaker is the effect of income on support for wealth redistribution.	Partially supported
<b>H5:</b> The higher an individual's education level and the younger an individual is, the weaker is the effect of income on support for wealth redistribution.	Not supported
<b>H6:</b> The more post-materialist values an individual holds, the weaker is the effect of income on support for wealth redistribution.	Supported
<b>H7:</b> The higher the individual's level of political trust is, the weaker is the effect of income on support for wealth redistribution.	Rejected

## **Chapter 5: Conclusion and discussion**

In this final chapter, the main findings of this thesis will be presented. In the conclusion, the research questions are answered and the implications of my conclusions for the theoretical framework will be presented. In the discussion part, I will outline the contributions of this research. Finally, I will discuss limitations and make recommendations for future research.

### **5.1 Conclusion**

In this thesis, I have explained the relationship between income and income inequality and support for wealth redistribution in twelve Latin-American countries over the period of 1990 until 2014. First, I formulated a descriptive research question to get insight in the variations of wealth redistribution across and within Latin America:

*How does support for wealth redistribution vary across and within Latin American countries in the period of 1990-2014?*

The data from the aggregated WVS data-file demonstrated that there was, generally speaking, an increase in support for wealth redistribution over the years. However, this increase is rather small. For most years, the data demonstrated not a strong support for nor disapproval of wealth redistribution. Furthermore, variation between countries is found. On average, support for wealth redistribution is the highest in Chile, followed by Uruguay, Ecuador and Argentina. The lowest average support for wealth redistribution is found in the Dominican Republic, followed by Guatemala and Peru. Moreover, the pattern of support for wealth redistribution per country has been studied. Most Latin American countries followed the general pattern of a slight increase of support for wealth redistribution over the years. However, in Peru there was a dip in support for wealth redistribution in 2000, thereafter support for wealth redistribution strongly increased again. One can speculate that this dip was due to the corruption and human rights violations of president Fujimori (Conaghan, 2005, p. 1). Overall, I can conclude that support for wealth redistribution has slightly increased over the years and that there are differences in support for wealth redistribution between Latin-American countries.

Since I was primarily interested in the relationship between income and income inequality and support for wealth redistribution, I formulated a second, descriptive research question:

*How does the relationship between income and income inequality and support for wealth redistribution vary across and within Latin American countries in the period of 1990-2014?*

The results demonstrate that in most countries, income inequality slightly decreased over the years. However, in no country the Gini-coefficient reached a value below 40. In comparison with European countries, this is a very high value (The World Bank, 2019a). This indicates that income inequality indeed is still very high in the Latin-American region, which could affect the support for wealth redistribution of its citizens. The descriptive results indeed show a relationship between income inequality and support for wealth redistribution: an increase in the former corresponds with a small

increase in the latter. Moreover, in some countries, we see a decline in income inequality in recent years. For example, in Colombia the level of income inequality has decreased, although it remains high compared with international standards. The decrease can be explained by the fact that the government is specifically developing programmes to decrease inequality (Joumard & Londoño Vélez, 2013).

To get insight in the explanatory value of different theoretical mechanisms on the relationship of income and income inequality and support for wealth redistribution, a third research question was formulated:

*To what extent can the relationship between income and income inequality and support for wealth redistribution be explained by the self-interest theory, the social mobility theory, the cultural theory, and the principal-agent theory of trust in Latin American countries in the period of 1990-2014?*

In total, I have distinguished four different theories to explain differences in support for wealth redistribution. In the theoretical framework, I outlined how these theories differ from and interact with each other by using the overarching rational choice approach. Looking at the results from the analysis, I conclude that the middle-range theories certainly add explanatory value in explaining the relationship between income and income inequality and support for wealth redistribution. The upcoming paragraphs will summarize the results per theory.

First, the self-interest theory predicts that people will support wealth redistribution if this financially benefits them. The results clearly demonstrate that an individual's income is an important explanation for its support for wealth redistribution. Latin Americans who are relatively wealthy tend to support wealth redistribution policies less. Hence, someone's income has a strong explanatory value. These results are in line with the self-interest theory and previous research that focused on the self-interest theory (Kam & Nam, 2008; Owens & Pedulla, 2014). After this conclusion was reached, I analysed which theories strengthen or weaken this relationship. The self-interest theory predicts that higher income inequality strengthens the relationship between income and support for wealth redistribution. The results indeed demonstrate that someone's income becomes more important in determining support for wealth redistribution if income inequality is higher. These results extend the Richard-Meltzer hypothesis (Richard & Meltzer, 1981; 1983). Instead of focusing on a direct relationship between income inequality and support for wealth redistribution, as the Richard-Meltzer hypothesis did, this research provides more detail by showing that income inequality strengthens the relationship between income and support for wealth redistribution in Latin American countries.

Second, the social mobility theory predicts that people's expectations on the future guide their support for wealth redistribution. These expectations on the future are formed by individual's characteristics, such as age and education. It was expected that becoming older strengthens the effect of income on support for wealth redistribution. The results partially support this hypothesis, as age marginally affects the relationship between income and support for wealth redistribution. However, it should be noted that the sample contained many young Latin American individuals. This could have

biased the results. It was also expected that having higher levels of education weakens the effect of income on support for wealth redistribution. The results indeed indicate differences in highly-educated versus poorly-educated people. For highly-educated people, their income-level is less decisive in forming their support for wealth redistribution than for poorly-educated people. Hence, the results demonstrate that the social mobility theory has some explanatory value, which is in line with earlier research (Blanden et al., 2004; Cojocaru, 2014). Moreover, this research extends earlier research on the social mobility theory, by making an important nuance by focusing on the interaction between the social mobility and the self-interest theory. We can therefore conclude that self-interest remains most important in Latin America, but that the impact of self-interest does somewhat changes due to different expectations of individuals. This extends the results of for example Cojocaru (2014), who only focused on the direct relationship between social mobility and support for wealth redistribution.

Third, the cultural theory argues that the impact of income and income inequality on support for wealth redistribution is affected by individual's deeply rooted values and beliefs. These values and beliefs are captured by measuring whether an individual has material versus post-material values. The results strongly support the hypothesis. An individual's income is less decisive in deciding support for wealth redistribution, if this individual has more post-material values. These results are in line with Inglehart's (1977) conclusion, who argued that non-material needs are more important for post-materialists. This explains why the relationship between income and support for wealth redistribution is less strong for post-materialists compared with materialists. The relationship between post-materialism and support for wealth redistribution was also demonstrated in other research (Erickson & Laycock, 2002; Janmaat and Braun, 2009). This research extends their results, by not focusing on the direct relationship between post-materialism and support for wealth redistribution, but the moderating effect of post-materialist values on the relationship between income and support for wealth redistribution.

Finally, the principal-agent theory of trust expects that having more political trust weakens the relationship between income and support for wealth redistribution. Due to asymmetrical information, the principal-agent dilemma arises, which make people call for alternatives, such as the trust in the government, to form their opinion on wealth redistribution policies. However, the results show a different relationship, as it is found that political trust strengthens instead of weakens the relationship between income and support for wealth redistribution. These results are surprising considering the results of earlier research (Berens & Von Schiller, 2017; Korpi & Palme, 1998). However, these studies researched the direct relationship between political trust and support for wealth redistribution, while this research investigated how political trust moderates the relationship between income and support for wealth redistribution. It turns out that self-interest remains most important. If rich Latin Americans have trust in their government, they support wealth redistribution policies less, as, from a self-interested perspective, they do not want to redistribute their money to the poor. The same argumentation can be used for poor individuals with no political trust. They do not believe that the government will actually redistribute money, therefore they support wealth redistribution less than poor people with higher levels

of political trust. This can be an important explanation for the paradox of Latin America. In this region, many citizens are poor and lack political trust. This lack of political trust can explain why they support wealth redistribution policies less, despite their low income-level.

To conclude, this study found that the support for wealth redistribution of Latin Americans is strongly affected by self-interest. However, some groups of Latin Americans are less touched by their self-interest than other groups. This can mainly be explained by the cultural theory. People's values, i.e. materialist versus post-materialist values, do influence the extent to which self-interest influences support for wealth redistribution. Moreover, besides the cultural theory, the social mobility theory also partially explains the relationship between self-interest and support for wealth redistribution. It seems that individual's expectations on the future, which are formed by individual characteristics, influence to some degree the extent to which self-interest influences people's support for wealth redistribution. Finally, with regards to the principal-agent theory of trust, it turns out that having more political trust even reinforces the impact of self-interest. This can be an important explanation for the poor Latin American citizens that do not strongly support wealth redistribution policies. To summarize, in this research important steps are being made in connecting different theories to solve the unexplained paradox in Latin America.

## **5.2 Discussion: theoretical and methodological contributions**

In this research I have focused on the unexplained paradox of wealth redistribution in Latin America. In this part, I will reflect on the outcomes of the analyses and their implications.

First of all, the academic literature on support for wealth redistribution lacks theoretical foundations. Although wealth redistribution policies have been broadly discussed in the academic literature, the focus mainly is on the self-interest or social mobility theory and connections between different theories have yet not been made. In my research, I have connected the different explanations for support for wealth redistribution by developing an overarching theoretical framework. This theoretical framework was needed to outline how different middle-range theories differ from each other. To my knowledge, an extensive theoretical framework in which different theories ranging from self-interest to cultural theory are compared with each other, was not earlier developed in previous research.

Moreover, I decided not to treat the different theories separately, but instead I focused on the interactions between different theoretical mechanisms. Consequently, I was able to demonstrate how the relationship between income and income inequality and support for wealth redistribution works for different subgroups. This takes research on this topic a step further, as earlier research solely measured different theories separately.

Furthermore, the existing theories on support for wealth redistribution did not discuss political trust. By using the overarching rational choice approach, I was able to include political trust in the theoretical framework by using the principal-agent theory of trust. Although the empirical findings on this theory were contradictory to the expectations, an important opening into the potential impact of

political trust on the relationship between income and income inequality and support for wealth redistribution in Latin America was presented.

Finally, this research also delivered some important methodological contributions. I have used multilevel analysis to take country-specific concepts into account. Instead of using a relatively easy two-level nesting structure, in which individuals are nested in country-wave combinations, I decided to include all random effects at all levels that could potentially be relevant (Schmidt-Catran & Fairbrother, 2016). By doing this, I made sure that no random effects could be ignored. This advanced cross-classified nesting structure is seldomly used in political science research (*ibid.*). Moreover, I did not test direct relationships, but offered more nuance by testing two-level interactions. As a robustness-check, I even tested if these two-level interactions depend on the country's level of income inequality. These interaction models are methodologically challenging, and offered important insights in the paradox of Latin America.

### **5.3 Limitations and future research**

Besides the contributions of this research, there are also some limitations. These limitations lead, in turn, to recommendations for future research.

In this thesis, I have focused on the role of political trust on the relationship between income and support for wealth redistribution by incorporating the principal-agent theory of trust in the theoretical framework. However, my research found contradictory results in comparison with the expectations. Since previous research did not focus on the moderating effect of political trust on the relationship between income and support for wealth redistribution, it is not completely clear yet what the role of political trust is on the relationship between income and support for wealth redistribution. Therefore, it is valuable to measure the impact of political trust more comprehensively in future research. This is extremely beneficial to do when researching the Latin American region, given the political unrest in this region (Zmerli & Castillo, 2015).

Furthermore, in this thesis, I have only focused on cross-sectional data. However, it could be the case that income inequality has a lagged effect on support for wealth redistribution (see for example Kerr, 2014; Olivera, 2015). Although income inequality is 'sticky', we see differences in the level of income inequality per wave in Latin American countries. It could therefore be valuable to see if current support for wealth redistribution is affected by income inequality of a survey-wave ago. I would therefore suggest that future research focuses on the lagged effect of income inequality on support for wealth redistribution. It would be most valuable to test the long-term lagged effect, as earlier research already captured the short-term lagged effect of income inequality (*ibid.*).

Moreover, future research should focus on the operationalization of income inequality, a problem that was also indicated by Luebker (2014). Due to a lack of available data, I could not use the Theil Index, GE(1), but instead used the Gini-coefficient. However, this measurement does not satisfy all six requirements of a good measurement of income inequality (Haughton & Khandker, 2009, p. 105-

106). Although I did robustness checks with the Theil Index, GE(1), it was difficult to compare the different measurements as only limited data was available for the Theil Index, GE(1). It would therefore have been better if different measurements of income inequality were used with availability for the same time-period. This is something future research should focus on, in order to make more reliable conclusions on the relationship between income and income inequality and support for wealth redistribution.

Furthermore, I demonstrated that the cultural theory adds explanatory value. However, I only focused on the distinction between materialists and post-materialists. Although this distinction captures all values in a broad way (Inglehart, 1977), future research could focus on the impact of other values, like egalitarianism. By doing this, even more nuance is offered in the explanatory value of the cultural theory.

Finally, this research only focused on the Latin American region. This was a deliberate choice, given the unexplained paradox of this region and considering that support for wealth redistribution is not often researched in this area. Therefore, a stronger focus on this region was certainly needed. However, by focusing on only one specific region, there were limited observations at the second- and third-level of the multilevel analysis. This lowered the statistical power, which might have affected the findings. Moreover, in the robustness-check I estimated three-way interaction models to test if a theorized two-way interaction depends on the level of income inequality in a country. The results indicated that this could be indeed be the case for post-materialism and education. However, the effects were rather small, due to the lower statistical power in these complex models. By including more countries in future research, the sample-size will increase, which makes the results of complex multilevel- and interaction models more reliable. Moreover, by including more countries, one can compare the Latin American region with other regions. This could be very valuable in explaining the paradox of Latin America.

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## **Appendix A: Explanation on the choice for the dependent variable**

Individual support for wealth redistribution is measured by asking if individuals believe that incomes should be made more equal or not, i.e. question E035 in the aggregated WVS data-file. Alternatively, support for wealth redistribution could be measured by indicator E037 in the same data-file, labelled as ‘Government responsibility’, with the following question:

*“How would you place your views on this scale? Government should take more responsibility to ensure that everyone is provided for versus People should take more responsibility to provide for themselves.”*

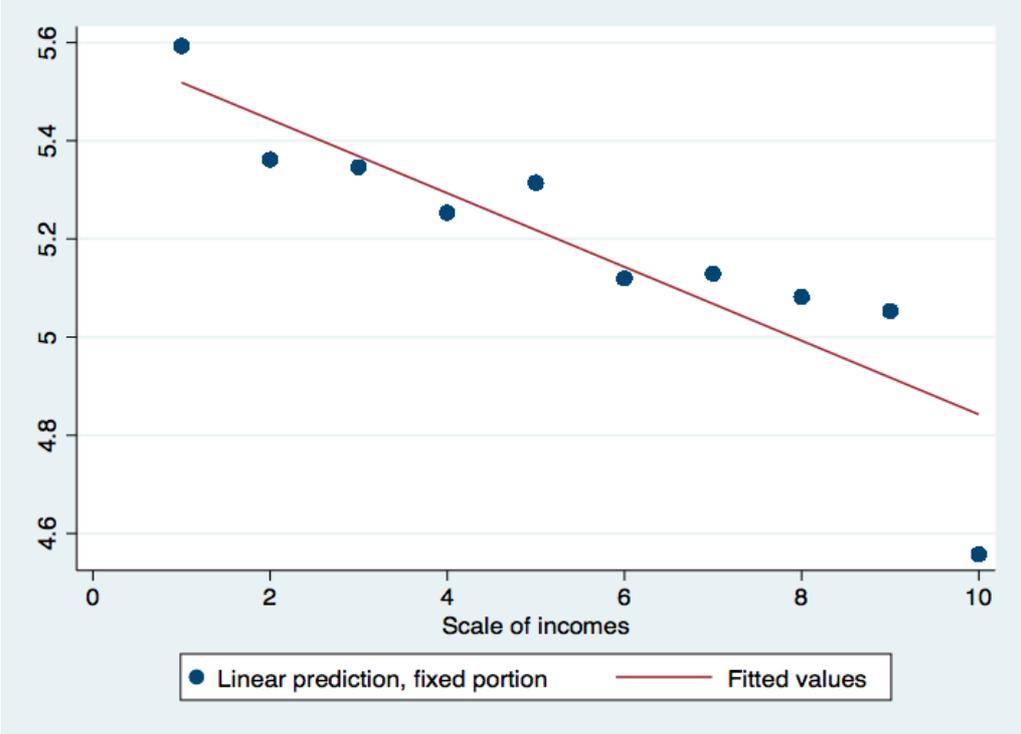
In this question, respondents rated their opinion on a 1-10, where a score of 1 meant a total agreement with a more responsible government and a score of 10 meant that the respondent completely agrees with the view that people, instead of the government, should provide for themselves (World Values Survey, 2015).

In Chapter 2, support for wealth redistribution was defined as *the extent to which an individual supports wealth redistribution policies aimed to redistribute wealth from the rich to the poor*. Wealth redistribution policies, in turn, were defined as *governmental policies aimed to redistribute wealth from the rich to the poor*. Considering these conceptualizations, one could argue that the operationalization of support for wealth redistribution should consist of a variable that measures the support of an individual for redistribution of wealth by the government. This could be done by combining the items ‘Income equality’ and ‘Government responsibility’. A combination of these two variables measures 1) if individuals are in favour of more redistribution of wealth and 2) if the government should provide for this. However, the internal reliability between these two variables is very low. More specifically, the reliability of individual support for wealth redistribution, consisting of two items, was not adequate:  $\alpha = .348$ . This low internal reliability indicates that the variables should not be combined together to measure support for wealth redistribution. Therefore, I have decided to only use indicator E035, focusing on whether incomes should be made more equal or not, to measure individual support for wealth redistribution. The choice for this variable, instead of indicator ‘E037’, was deliberately made. Item E037 asks whether the government should provide for the poor. However, there are various ways in which the government could provide for the poor. Government policies that provide for the poor are not necessarily aimed at redistributing wealth from the rich to the poor. Therefore, item E035 is a better operationalization, as this variable specifically mentions whether incomes should be made more equal, which can only be done by redistributing wealth.

**Appendix B: Variables of quasi-interval level measurement**

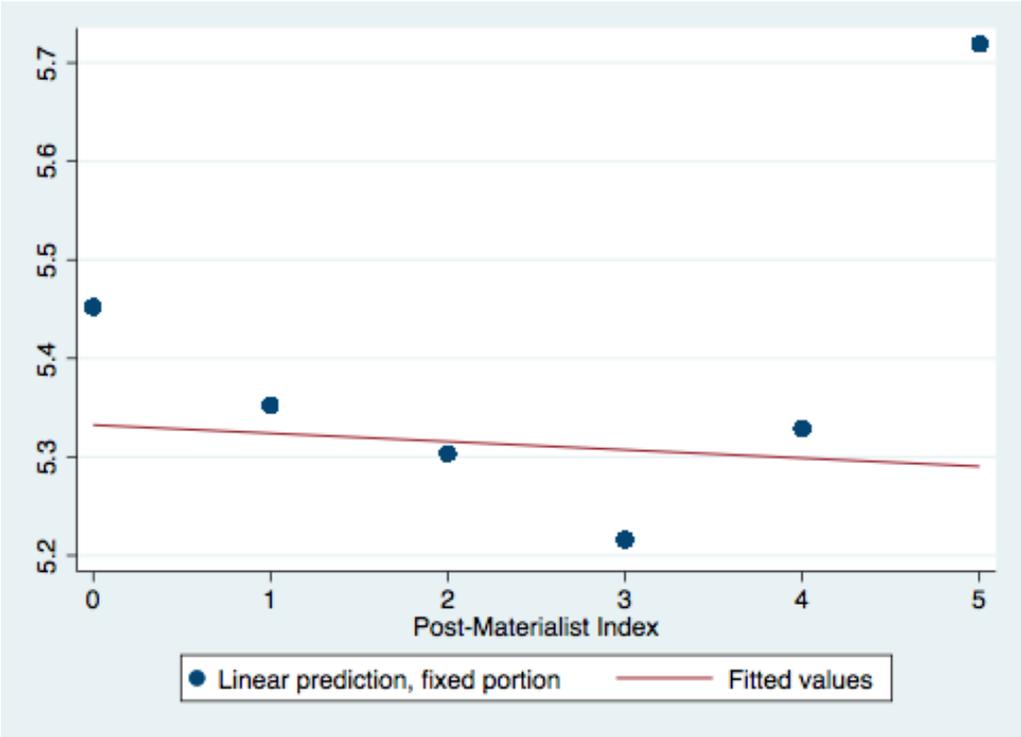
The figures below show the effect of the concerned variable on support for wealth redistribution. This was done to test if the variables could be treated as if they were of interval level measurement. For the predicted values of income, only the tenth income-scale shows an anomalous relationship. For the predicted values of the post-materialist index, this abnormal relationship is only found for score 5 (highest score of post-materialism). For political trust, value 2 differs highly from the others. However, the rest of the values show a linear relationship, therefore the variables were treated as variables of interval level measurement. As robustness analysis, political trust will be measured as dummy-variable, to test if this changes the results. This was done because political trust shows the least linear relationship.

**Figure B.1: Predicted values effect of income**



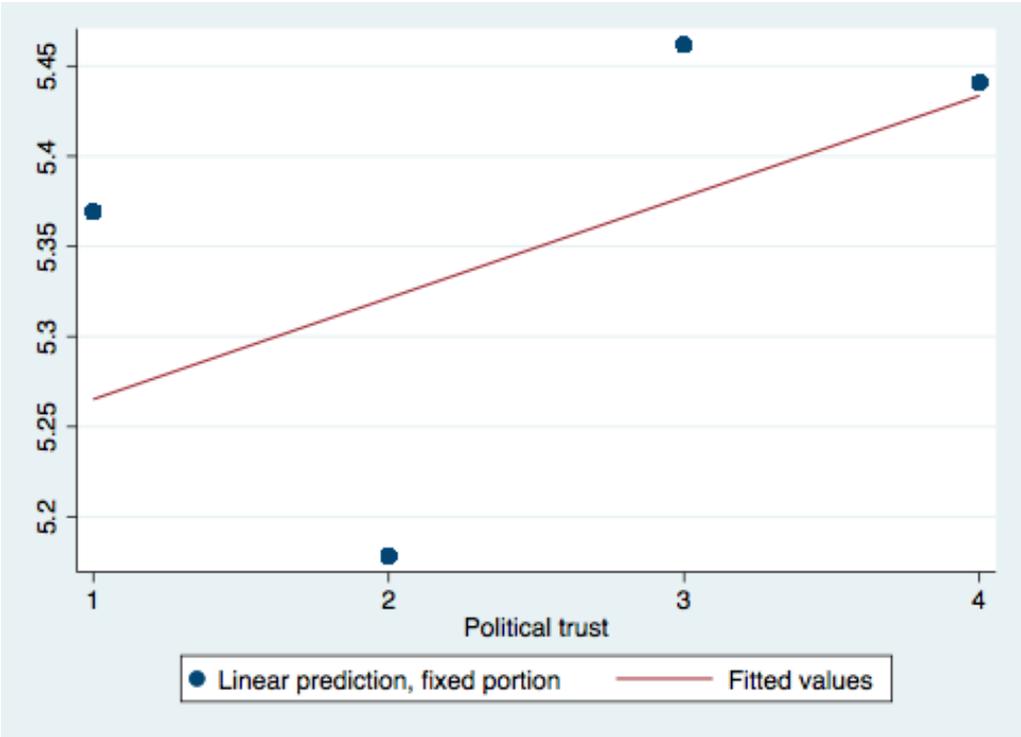
Source: Aggregated WVS data-file, 1990-2014

**Figure B.2: Predicted values effect of post-materialism**



Source: Aggregated WVS data-file, 1990-2014

**Figure B.3: Predicted values effect of political trust**



Source: Aggregated WVS data-file, 1990-2014

### **Appendix C: Measurements of income inequality**

A good measurement of income inequality meets six requirements. First, the measurement should be mean independent, meaning that if all incomes were doubled, the measure does not change (Haughton & Khandker, 2009, p. 105). Second, there should be population size independence, meaning that *ceteris paribus*, the measure of inequality does not change if the population changes (*ibid.*). Third, there should be symmetry, meaning that income swaps between people should not change the measure (*ibid.*, p. 106). Fourth, there is a criterium of Pigou-Dalton Transfer sensitivity. This criterium means that the transfer of income from rich to poor should reduce the measure of inequality (*ibid.*). Fifth, it is desirable to have decomposability, meaning that inequality can be broken down by population groups, by income sources, or in other dimensions (*ibid.*). Sixth and finally, there should be statistical testability, meaning that the changes in the index over time should be testable (*ibid.*).

Income inequality is often measured by using the Gini coefficient, with a range from 0 (perfect equality) to 1 (perfect inequality) (Haughton & Khandker, 2009, p. 101). The World Bank multiplies this number by 100 (*ibid.*, p. 104). The Gini coefficient is derived from the Lorenz curve, which divides the population from the richest to the poorest (*ibid.*, p. 101). The Gini coefficient is a good measurement of inequality, as it has many desirable properties. However, the measurement does not satisfy all the six criteria. The fifth criterium, decomposability, is not satisfied. This is because the sum of all the Gini coefficients of the subgroups in a country is not the same as the total Gini of the country (*ibid.*, p. 106).

Another measurement of income inequality is the Theil indexes (Theil's T and Theil's L). This measurement does satisfy all the six criteria. The Theil indexes are both generalized entropy (GE) inequality measures, which refers to a larger family of measures (Haughton & Khandker, p. 107). In contrast to the Gini coefficient, the Theil indexes are decomposable, meaning that the measurement is additive across different groups or regions in a country (*ibid.*, p. 106). However, the Gini coefficient is easier to interpret and has a more straightforward representation than the Theil Indexes (The World Bank, 2016b). The values of the Theil indexes range from zero to infinity, where zero means total equality and higher values means higher levels of inequality (Haughton & Khandker, 2009, p. 106).

## **Appendix D: Self-determination beliefs as control variable**

Numerous publications demonstrated the relationship between self-determination beliefs and support for wealth redistribution (see for example Alesina & Angeletos, 2005; Fong, 2001). Generally speaking, self-determination beliefs are related with lower support for wealth redistribution, while exogenous-determination beliefs are related with higher support for redistributing policies (ibid.). However, it could highly be the case that self-determination beliefs are an effect of the welfare state, as those beliefs are shaped by politics and indoctrination (Alesina & Glaeser, 2004, p. 185). Although the causal direction remains unclear, it seems important to control for the possible effect of self-determination versus exogenous-determination beliefs. This can be done by using data of the WVS, indicator V100. In this question, respondents rated on a 1-10 scale to what extent they agreed with the following statement (World Values Survey, 2015):

*“In the long run, hard work usually brings a better life versus hard work does not generally bring success – it is more a matter of luck and connections.”*

A score of 1 indicated that people believe that hard work brings success, which corresponds with self-determination beliefs. A score of 10 indicated that respondents believe that luck and connections bring success, which corresponds with exogenous-determination beliefs (ibid.).

However, I have chosen not to include self-determination beliefs as control variable in this research. There are two reasons for this decision. First, there are a lot of missing values on this variable. Around 30 percent (28.99%) of the values is missing. This means that if self-determination was included in the empirical models as control variables, a lot of observations would be automatically missing. As a consequence, valuable information on the other variables could be lost. Second, self-determination beliefs are describing someone’s values, which is already captured in the post-materialist index. Therefore, it is highly possible that self-determination and the post-material values index are measuring about the same, which could bias the results. For these two reasons, I have decided to not include self-determination beliefs as control variable in this research.

## **Appendix E: Missing values net migration rates**

In this research, a country's net migration rate is included as control variable in the random intercept fixed slope models. However, values on this variable are only presented every four or five years. For every Latin-American country researched in this paper, data is available for only the following years: 1987, 1992, 1997, 2002, 2007, 2012 and 2017 (The World Bank, 2019b). If only the net migration rates of these years were reported, this would result in a lot of missing values. More concretely, around 80% of all observations would be reported as missing values in this case. More importantly, these missing values are not random, but instead systematic. This might have an impact on the estimations (Field, 2013, p. 108).

To solve this problem, I have calculated the mean value between two reported years and replaced this mean value for the missing values between those years. This is represented in the following formula:

$$\text{Value for year } B, \text{ between years } A \text{ and } C = \frac{\text{value year } A + \text{value year } C}{2}$$

By using the calculated mean value, the problem of systematic missing was solved. Since there were no missing values for the Latin-American countries for the reported years, it was possible to calculate each mean value for the years between those reported years.

## Appendix F: Information on different research methods

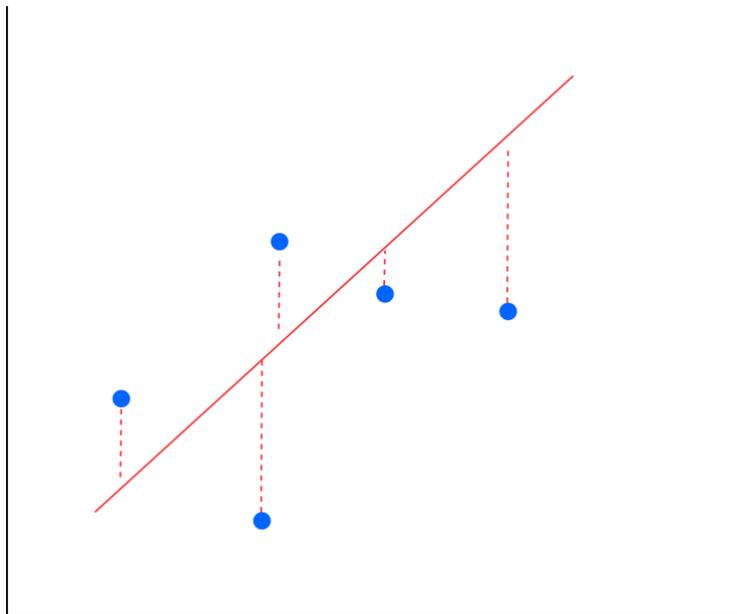
### F.1: OLS Regression analysis

The basic multiple regression formula is:

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 \dots + \beta_k X_k + \varepsilon_i$$

This equation contains the fundamental idea that the value on the dependent variable ( $Y$ ) for person  $i$  can be predicted from a model and the error associated with that predication (Field, 2018, p. 371). The value predicted for the dependent variable is based on multiple predictors (the independent variables) (ibid., p. 374).  $\beta_1$  is the coefficient which shows how much  $Y$  changes with one-point increase in the first independent variable  $X_1$ . Likewise,  $\beta_2$  is the coefficient for a one-point increase in the second independent variable  $X_2$ . Generally speaking, unlimited predictors can be added in the model to predict the value of  $Y_i$  (ibid.). Besides the predictors, the error term for person  $i$  ( $\varepsilon$ ) is added in the model, which captures the unexplained variance. In other words, the error term captures the deviation of the observation from the estimated regression line. The error term is included, because the model is estimated by the observations, but there are distances between the estimated model and the actual observed data points (ibid., p. 375). This is also illustrated in Figure F.1.

**Figure F.1: Multiple OLS regression model (own work based on Field, 2018, p. 375)**



In order for the OLS regression model to be generalized, four important assumptions must be met (Field, 2018, p. 385). If one of these assumptions is violated, the estimated results could be seriously biased. This means that the coefficients and standard errors of the sample are systematically different than those in the population (ibid., p. 381). The four assumptions are 1) additivity and linearity, 2) independent errors, 3) homoscedasticity, and 4) normally distributed errors (ibid., p. 387-388). The first assumption – additivity and linearity – means that the dependent variable should be linearly related to the independent variables (ibid.). Moreover, adding up all the individual effects of each independent

variable should lead to the combined effect of all independent variables (ibid.). The second assumption means that there should be no autocorrelation, meaning that for any two observations the residuals should be uncorrelated (ibid.). The third assumption of homoscedasticity means that the variance of the residuals should be constant (ibid.). If this assumption is violated, there is heteroscedasticity, meaning that the variance is very unequal (ibid.). Finally, the assumption of normally distributed errors entails that the residuals should be normally distributed variables (ibid.). The four assumptions are often summarized in the following, general formula:

$$\varepsilon_i \sim N(0, \sigma_\varepsilon^2)$$

## F.2: Multilevel regression analysis

Multilevel analysis allows to work with cross-sectional data on more than one level. To understand the different models of multilevel analysis, I will first explain the null-model, without independent variables included. I assume that there are people who are nested in country-wave combinations. The null-model consists of two equations, one for each level. First, I will explain the equation for level 1, which looks as follows:

$$\text{Level 1: } Y_{ij} = \beta_{0j} + \varepsilon_{ij}$$

Here,  $Y_{ij}$  is the value for the dependent variable for individual  $i$  belonging to group  $j$ . This value consists of  $\beta_{0j}$ , which is the mean value of group  $j$ , for example country Argentina wave 6, and of  $\varepsilon_{ij}$ , which is the deviation of individual  $i$  from the mean  $\beta_{0j}$  in group  $j$ . In other words, the error term tells us how much the value of individual  $i$  deviates from the mean value of the country-wave combination. All components in this model are random. This model can be extended by adding a second equation for level 2:

$$\text{Level 2: } \beta_{0j} = \gamma_{00} + u_{0j}$$

This second equation defines  $\beta_{0j}$  from the first-level formula.  $\beta_{0j}$ , the mean value of country  $j$ , consists of the mean of all the different countries, i.e.  $\gamma_{00}$ , and the deviation of group  $j$  from this group mean, i.e.  $u_{0j}$ . Taking these two formulas together, the single mixed-effects equation is defined as:

$$Y_{ij} = \gamma_{00} + u_{0j} + \varepsilon_{ij}$$

This equation tells us that the value of individual  $i$  belonging to group  $j$  can be derived from the mean of the means of all country-wave combinations, plus the deviation of group  $j$  from this grand mean, plus the deviation of individual  $i$  from this grand mean. The grand mean, i.e.  $\gamma_{00}$ , is a fixed component, while the other two components are random. Moreover, it is assumed that the two error-terms  $u_{0j}$  and  $\varepsilon_{ij}$  are not correlated with each other. In other words, they are independent. With this model, the total variance of  $Y_{ij}$  can be decomposed, by calculating the intraclass correlation (ICC). The ICC is calculated by dividing the variance on the higher level by the total variance of the dependent variable. This can be summarized in the following equation:

$$\rho = \frac{\sigma_{u0}^2}{\sigma_{u0}^2 + \sigma_e^2}$$

If the ICC gets a higher value, it means that more variance can be explained on the higher, country level. The ICC thus contains the proportion of variance that is explained on the higher level.

To test variances with the multilevel model, the likelihood ratio test is used. In this test, the one-level model and the two-level model are compared with each other. More specifically, the  $-2 \cdot \log$  likelihood ( $-2LL$ ) of these two models are compared with each other. With the likelihood ratio test, the null-hypothesis that the between-group variance is zero is being tested. Since variances cannot be negative, the alternative hypothesis is always directional and tests whether the between-group variance is bigger than zero. If the between-group variance is indeed bigger than zero, this null-hypothesis is rejected, meaning that the two-level model explains more than the one-level model. This means that a multilevel model is needed, as there is significant variance between-groups.

There are multiple multilevel models. A first model is the random intercept, fixed slope model. In this model, it is assumed that the effect of micro-level variables on the dependent variables is the same in all groups. This can be displayed in the following formulas:

$$\text{Level 1: } Y_{ij} = \beta_{0j} + \beta_1 X_{ij} + \varepsilon_{ij}$$

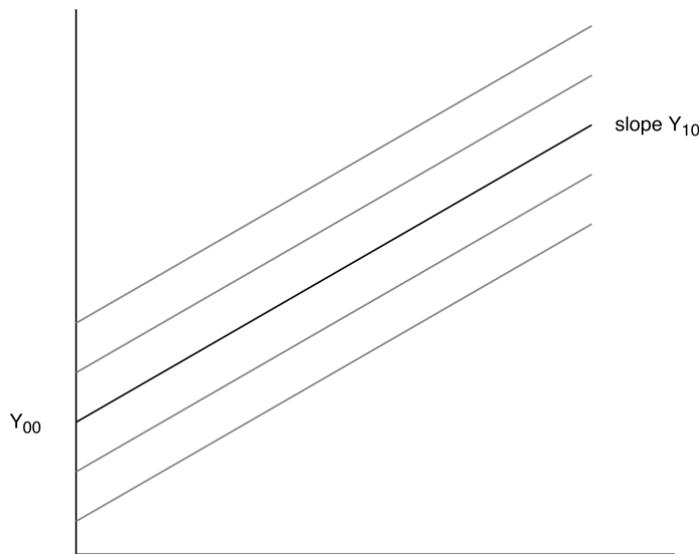
$$\text{Level 2: } \beta_{0j} = \gamma_{00} + u_{0j}$$

If these formulas are combined, we get the following mixed-effects equation:

$$Y_{ij} = \gamma_{00} + \gamma_{10} X_{ij} + u_{0j} + \varepsilon_{ij}$$

The fixed part in this formula is 1) the mean intercept in population of groups ( $\gamma_{00}$ ), i.e. the grand mean, and 2) the effect of the independent variable in every group ( $\gamma_{10}$ ). The random parts in this formula are the two variances: 1) the variance of deviations within each group ( $\varepsilon_{ij}$ ), and 2) the variance of intercepts between-groups ( $u_{0j}$ ). This means that for each group, i.e. for each country-wave combination, there is a random intercept, but the slope of the regression-line for each group is fixed. This is also visible in Figure F.2.

**Figure F.2: Random intercept, fixed slope multilevel model (own work)**



The random intercept, fixed slope model can also be used with macro-level variables. Here, the formula looks slightly different, as the independent variable on micro-level is now changed for an independent variable on macro level. This is displayed in the following formulas. Please note that the independent variable is now displayed in the equation of level 2, because it is a macro-level variable.

$$\text{Level 1: } Y_{ij} = \beta_{0j} + \varepsilon_{ij}$$

$$\text{Level 2: } \beta_{0j} = \gamma_{00} + \gamma_{01}W_j + u_{0j}$$

Combining these formulas, we get the following mixed-effects equation:

$$Y_{ij} = \gamma_{00} + \gamma_{01}W_j + u_{0j} + \varepsilon_{ij}$$

The estimated parameters are more or less the same as with the previous model for micro-level variables. There is a mean intercept in the population of groups ( $\gamma_{00}$ ), the effect of the independent macro-variable on the group means ( $\gamma_{01}$ ), and the two error-terms, which are random.

Thus far, the random intercept, fixed slope model for micro- and macro-level variables has been discussed. Besides this model, one can also estimate a random intercept, random slope model in multilevel analysis. Here, both the intercept and the slope are random. This allows to account for variance of slopes of the independent variable across groups. This can be displayed in the following formulas:

$$\text{Level 1: } Y_{ij} = \beta_{0j} + \beta_{1j}X_{ij} + \varepsilon_{ij}$$

$$\text{Level 2: } \beta_{0j} = \gamma_{00} + u_{0j}$$

$$\text{Level 2: } \beta_{1j} = \gamma_{10} + u_{1j}$$

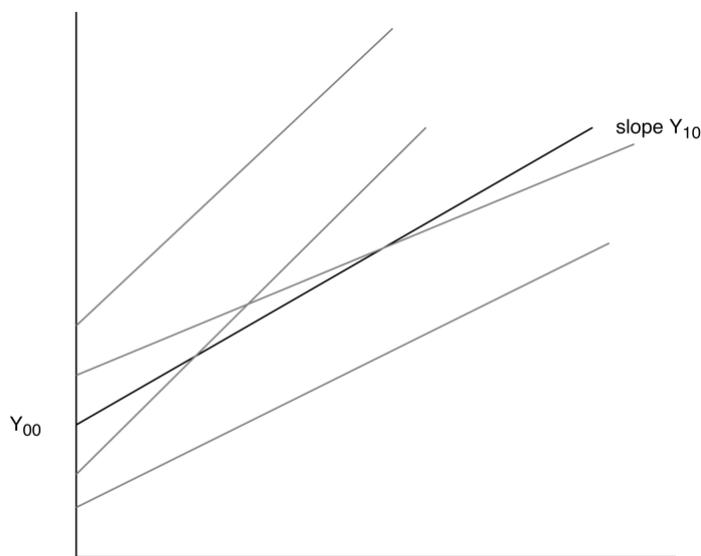
The formulas can be combined in the following mixed-effects equation:

$$Y_{ij} = \gamma_{00} + \gamma_{10}X_{ij} + u_{0j} + u_{1j}X_{ij} + \varepsilon_{ij}$$

There are still fixed parameters in this model: 1) a mean intercept in population of groups ( $\gamma_{00}$ ), and 2) a mean effect of the independent variable in every group ( $\gamma_{10}$ ). However, besides the earlier explained

error-terms, an extra error-term is added in the model:  $u_{ij}$ . This is the variance in coefficients, the variance of the effects of the independent variable in populations of groups. This error-term indicates that the slopes can differ between groups, i.e. the slopes are random. Finally, there is a variance which cannot be directly seen in the formula:  $\sigma_{u01}$ , which is the covariance of intercepts and effects of the independent variable in populations of groups. If the covariance is positive, it means that the intercept and the slope are positively correlated with each other. A negative covariance indicates a negative correlation between the intercept and the slope. If the covariance is zero, it means that the intercept and slope are not correlated at all. The random intercept, random slope model can also be graphically illustrated, which is done in Figure F.3.

**Figure F.3: Random intercept, random slope multilevel model (own work)**



A final multilevel model is the cross-level interactions model. This model is useful to test cross-level interaction hypotheses. These hypotheses expect the slope of the effect of a micro-level variable on the dependent variable to be affected by the level of a macro-level variable. For example, the effect of income (micro-level) on individual's support for wealth redistribution, is expected to be affected by the level of income inequality in a country (macro-level). This can be displayed by the following formulas:

$$\text{Level 1: } Y_{ij} = \beta_{0j} + \beta_{1j}X_{ij} + \varepsilon_{ij}$$

$$\text{Level 2: } \beta_{0j} = \gamma_{00} + \gamma_{01}W_j + u_{0j}$$

$$\text{Level 2: } \beta_{1j} = \gamma_{10} + \gamma_{11}W_j + u_{1j}$$

The combined mixed-effects equation is as follows:

$$Y_{ij} = \gamma_{00} + \gamma_{10}X_{ij} + \gamma_{01}W_j + \gamma_{11}X_{ij}W_j + u_{0j} + u_{1j}X_{ij} + \varepsilon_{ij}$$

Now we have a micro-level independent variable and a macro-level independent variable added in the formula. Moreover, since an interaction is expected, the interaction-term is also added in the formula.

The fixed estimated parameters in this model are the mean intercept ( $\gamma_{00}$ ), the mean effect of inequality ( $\gamma_{01}$ ), the mean effect of income ( $\gamma_{10}$ ) and the change in the effect of income if inequality increases by 1-point or vice versa ( $\gamma_{11}$ ). It is important to note that the mean effect is now the effect if a variable if the other variable has a value of zero. To make the results better interpretable, the value of zero can be shifted by subtracting the mean value of the variable from each observation. This is called mean centring. The random components are, again, the error terms visible in the formula and the covariance.

## **Appendix G: Missing country-wave combinations**

Below, one can find the missing country-wave combinations for the post-material values index and the Gini-coefficient. Per wave, the countries without values on the post-material values index or the Gini-coefficient are reported.

### **Post-material values index:**

Wave 3: Colombia, El Salvador

Wave 5: Colombia

### **Gini-coefficient:**

Wave 2: Brazil, Mexico

Wave 3: Colombia, Peru, Venezuela

Wave 4: Venezuela

Wave 5: Guatemala

Wave 6: Chile

## Appendix H: Additional descriptive statistics on support for wealth redistribution

In this appendix, additional descriptive statistics on the distribution of support for wealth redistribution are presented. The most important figures are presented and explained in chapter 4. The tables presented in this appendix give more detailed information.

**Table H.1: Mean value of support for wealth redistribution in 12 Latin-American countries over the period 1990-2014 per survey-wave**

<i>Wave</i>	<i>Average</i>
2 (1989-1993)	4.875
3 (1994-1998)	4.953
4 (1999-2004)	5.491
5 (2005-2009)	5.089
6 (2010-2014)	5.926

Source: Aggregated WVS data-file, 1990-2014

**Table H.2: Overall mean of support for wealth redistribution per Latin-American country over the period 1990-2014**

<i>Country</i>	<i>Average</i>	<i>Country</i>	<i>Average</i>
Argentina	5.444	El Salvador	4.173
Brazil	5.413	Guatemala	3.928
Chile	6.206	Mexico	5.294
Colombia	5.313	Peru	4.080
Dominican Republic	3.299	Uruguay	5.796
Ecuador	5.455	Venezuela	5.431

Source: Aggregated WVS data-file, 1990-2014

## Appendix I: Multi-collinearity tests

In Table I.1, one can find the VIF-score for each continuous variable in the dataset. The mean VIF-score is 1.28, which demonstrates that there are no problems of multicollinearity. Additionally, Table I.2 presents the Pearson's correlations between each variable.

**Table I.1: VIF-scores**

<i>Variable</i>	<i>VIF</i>
Income-scale	1.050
Age	1.050
Post-materialism	1.030
Political trust	1.020
Income inequality: Gini-coefficient	1.730
Ethnic fractionalization	1.610
GDP per capita	1.520
Net migration rate	1.220
Mean VIF	1.280

Source: Aggregated WVS data-file, 1990-2014

**Table I.2: Correlation table of all interval- and ratio-level variables**

<i>Variable</i>	Support for wealth redistribution	Income-scale	Age	Post- materialism	Political trust	Income inequality	Ethnic fractionali- zation	GDP per capita	Net migration rate
Support for wealth redistribution	1.000								
Income-scale	-0.055	1.000							
Age	0.044	-0.045	1.000						
Post-materialism	-0.003	0.132	-0.084	1.000					
Political trust	0.017	0.001	0.069	-0.017	1.000				
Income inequality	-0.027	-0.110	-0.114	-0.009	0.064	1.000			
Ethnic fractionalization	-0.052	-0.157	-0.153	-0.067	-0.001	0.517	1.000		
GDP per capita	0.173	0.129	0.149	0.015	-0.005	-0.504	-0.381	1.000	
Net migration rate	0.047	-0.006	0.075	-0.024	0.064	-0.144	-0.330	0.087	1.000

Source: Aggregated WVS data-file, 1990-2014

## Appendix J: Robustness check – Random intercept fixed slope models

**Table J.1: Random intercept fixed slope models of micro-level effects on support for wealth redistribution between 1990-2014**

Model	M1	M2	M3	M4	M5	M6	M7
	B	B	B	B	B	B	B
Intercept	5.197*** (0.163)	5.194*** (0.164)	5.389*** (0.173)	5.382*** (0.174)	5.168*** (0.175)	5.205*** (0.176)	5.364*** (0.198)
Income (centred)	-0.153*** (0.007)	-0.152*** (0.007)	-0.146*** (0.015)	-0.143*** (0.015)	-0.160*** (0.008)	-0.157*** (0.008)	-0.143*** (0.016)
Age (centred)		0.001 (0.001)		0.002 (0.002)			0.003 (0.002)
Education							
Low			Reference	Reference			Reference
Middle			-0.229*** (0.044)	-0.262*** (0.046)			-0.231*** (0.050)
High			-0.440*** (0.032)	-0.455*** (0.045)			-0.426*** (0.053)
Post-materialism (centred)					0.012 (0.015)		0.049*** (0.017)
Political trust (centred)						-0.005 (0.033)	-0.020 (0.020)
Income * Age		-0.001** (0.000)		-0.000 (0.001)			-0.000 (0.001)
Income * Middle education			0.023 (0.022)	0.019 (0.022)			0.014 (0.043)

*Continuation of Table J.1*

Income * High education			0.061***	0.065***			0.043*
			(0.019)	(0.019)			(0.023)
Income * Age * Middle education				-0.000			-0.000
				(0.001)			(0.002)
Income * Age * High education				-0.003*			0.001
				(0.001)			(0.001)
Income * Post-materialism					0.026***		0.021***
					(0.007)		(0.007)
Income * Political trust						-0.016**	-0.013
						(0.008)	(0.009)
Gender (control)							
Male	-0.042	-0.043	-0.038	-0.039	-0.030	-0.064*	-0.048
	(0.031)	(0.031)	(0.032)	(0.032)	(0.034)	(0.033)	(0.037)
Female	Reference	Reference	Reference	Reference	Reference	Reference	Reference
Ethnic fractionalization (control)	0.357	0.365	0.144	0.148	0.046	-0.052	-0.352
	(0.931)	(0.932)	(0.978)	(0.979)	(1.054)	(1.005)	(1.137)
GDP per capita (control)	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Net migration rate (control)	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	0.000	0.000	(0.000)	(0.000)	0.000	(0.000)
<i>Random effects</i>							
Country-wave variance (level 2)	0.276	0.276	0.218	0.216	0.288	0.252	0.217
Country variance (level 3)	0.170	0.171	0.214	0.215	0.182	0.212	0.229
Wave variance (level 3)	0.000	0.000	0.000	0.001	0.000	0.000	0.019
Log-likelihood	-104455.580	-104434.090	-93381.641	-93349.379	-82475.788	-89828.769	-68167.405

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*Continuation of Table J.1*

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Wald Chi-Square (df)	516.400 (5)	522.000 (7)	528.510 (9)	561.220 (15)	456.290 (7)	475.530 (7)	442.150 (19)
Level-2 N	33	33	30	30	30	30	26
Level-3 Country N	12	12	12	12	11	12	11
Level-3 Wave N	5	5	5	5	5	5	5
Total N	40969	40963	36654	36649	32486	35207	26920

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\* =  $p < .1$ , \*\* =  $p < .05$ , \*\*\* =  $p < .01$  (two-tailed)

B unstandardized coefficient

Standard errors in parentheses under the unstandardized coefficients

The micro-level variables are group-mean centred

The macro-level variables are grand-mean centred

Source: Aggregated WVS data-file, 1990-2014

## Appendix K: Robustness check – Cross-level three-way interaction hypotheses

**Table K.1: Random intercept random slopes models of cross-level interactions on support for wealth redistribution between 1990-2014**

Model	M10	M11	M12	M13	M14
	B	B	B	B	B
<i>Fixed effects</i>					
Intercept	5.164*** (0.164)	5.377*** (0.038)	5.113*** (0.173)	5.187*** (0.162)	5.351*** (0.182)
Income (centred)	-0.133*** (0.019)	-0.139*** (0.016)	-0.127*** (0.021)	-0.131*** (0.020)	-0.131*** (0.021)
Gini-coefficient (centred)	0.067* (0.041)	0.072* (0.042)	0.069* (0.040)	0.061 (0.039)	0.077* (0.042)
Age (centred)	0.000 (0.001)				-0.003* (0.001)
Education		Reference			Reference
Low					
Middle		-0.200*** (0.051)			-0.214*** (0.055)
High		-0.393*** (0.050)			-0.421*** (0.058)
Post-materialism (centred)			0.020 (0.017)		0.048*** (0.018)
Political trust (centred)				-0.005 (0.020)	-0.030 (0.023)
Income * Gini-coefficient	-0.005* (0.003)	-0.009** (0.004)	-0.05* (0.003)	-0.005* (0.003)	0.007* (0.004)

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*Continuation of Table K.1*

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Income * Age	-0.001*		-0.001
	(0.001)		(0.001)
Age * Gini-coefficient	0.000		0.000
	(0.000)		(0.000)
Income * Age * Gini	0.000		-0.000
	(0.000)		0.000
Income * Middle education		0.028	0.024
		(0.024)	(0.025)
Income * High education		0.060***	0.049**
		(0.021)	(0.024)
Middle education * Gini-coefficient		-0.021*	-0.019
		(0.011)	(0.012)
High education * Gini coefficient		-0.029***	-0.025**
		(0.011)	(0.012)
Income * Middle education * Gini		-0.011**	-0.009
		(0.006)	(0.006)
Income * High education * Gini		-0.016***	-0.018***
		(0.005)	(0.006)
Income * Post-materialism			0.035***
			(0.007)
Post-materialism * Gini-coefficient			-0.011***
			(0.004)
Income * Post-materialism * Gini			0.002
			(0.002)
			0.004**
			(0.002)

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*Continuation of Table K.1*

Income * Political trust				-0.023**	-0.022**
				(0.009)	(0.010)
Political trust * Gini-coefficient				-0.007	-0.014***
				(0.004)	(0.005)
Income * Political trust * Gini				0.001	-0.001
				(0.002)	(0.002)
GDP per capita (control)	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ethnic fractionalization (control)	-0.291	-0.389	-0.703	-0.603	-0.995
	(0.894)	(0.950)	(0.996)	(0.908)	(1.057)
Gender (control)					
Male	-0.080**	-0.076**	-0.071*	-0.081**	-0.066
	(0.036)	(0.038)	(0.039)	(0.037)	(0.041)
Female	Reference	Reference	Reference	Reference	Reference
<i>Random effects</i>					
Country-wave variance (level-2)	0.381	0.319	0.383	0.362	0.334
Country-variance (level-3)	0.069	0.112	0.071	0.070	0.095
Wave-variance (level-3)	0.000	0.000	0.000	0.000	0.000
Slope variance of income effect	0.003	0.000	0.003	0.003	0.001
Log-likelihood	-76635.164	-69434.434	-63166.613	-73991.855	-56284.338
Wald Chi-Square (df)	84.310 (10)	323.810 (14)	83.830 (10)	79.280 (10)	203.230 (26)
Level-2 N	25	23	23	24	21
Level-3 Country N	10	10	9	10	9
Level-3 Wave N	5	5	5	5	5
Total N	30045	27249	24948	28991	22266

\* =  $p < .1$ , \*\* =  $p < .05$ , \*\*\* =  $p < .01$  (two-tailed)

B unstandardized coefficient

Standard errors in parentheses under the unstandardized coefficients

The micro-level variables are group-mean centred

The macro-level variables are grand-mean centred

Source: Aggregated WVS data-file, 1990-2014

## Appendix L: Robustness check – Tobit regression analysis

**Table L.1: Tobit regression analysis of micro-level effects on support for wealth redistribution between 1990-2014**

Model	M1	M2	M3	M4	M5	M6	M7
	B	B	B	B	B	B	B
Intercept	6.361*** (0.151)	5.323*** (0.143)	5.634*** (0.151)	5.624*** (0.151)	5.252*** (0.148)	5.357*** (0.146)	5.545*** (0.157)
Income (centred)	-0.221*** (0.080)	-0.220*** (0.011)	-0.225*** (0.022)	-0.222*** (0.023)	-0.228*** (0.012)	-0.227*** (0.012)	-0.217*** (0.024)
Age (centered)		0.001 (0.002)		0.004 (0.003)			0.004 (0.003)
Education			Reference	Reference			Reference
Low							
Middle			-0.329*** (0.068)	-0.379*** (0.071)			-0.314*** (0.077)
High			-0.588*** (0.066)	-0.621*** (0.069)			-0.562*** (0.080)
Post-materialism (centred)					0.035 (0.028)		0.086*** (0.025)
Political trust (centred)						0.002 (0.028)	-0.024 (0.031)
Income * Age		-0.001** (0.001)		-0.000 (0.001)			-0.000 (0.001)
Income * Middle education			0.049 (0.033)	0.046 (0.003)			0.036 (0.037)

*Continuation of Table L.1*

Income * High education			0.101*** (0.029)	0.112*** (0.030)			0.078** (0.034)
Income * Age * Middle education				-0.001 (0.002)			-0.001 (0.002)
Income * Age * High Education				0.003* (0.002)			0.002 (0.002)
Income * Post-materialism					0.041*** (0.010)		0.031*** (0.011)
Income * Political trust						-0.028** (0.013)	-0.027* (0.014)
Gender (control)							
Male	-0.080* (0.047)	-0.081* (0.047)	-0.075 (0.050)	-0.074 (0.050)	-0.069 (0.052)	-0.114** (0.051)	-0.091 (0.057)
Female	Reference	Reference	Reference	Reference	Reference	Reference	Reference
<i>Additional information</i>							
Total N before censoring	42404	42398	38076	38071	33766	36628	28178
Left-wing censored	7953	7951	7093	7091	6236	6883	5104
Right-wing censored	7737	7734	7050	7048	6188	6892	5256
Total N after censoring	26714	26713	23933	23932	21342	22853	17818

All these models were estimated with country-wave fixed-effects models with Peru wave 6 as reference category

\* =  $p < .1$ , \*\* =  $p < .05$ , \*\*\* =  $p < .01$  (two-tailed)

B unstandardized coefficient

Standard errors in parentheses under the unstandardized coefficients

Source: Aggregated WVS data-file, 1990-2014

**Table L.2: Tobit regression analysis of cross-level interaction effect income and income inequality**

Model	M8	M9
	B	B
<i>Fixed effects</i>		
Intercept	4.965*** (0.441)	5.058*** (0.242)
Income (centred)	-0.199*** (0.038)	-0.200*** (0.036)
Gini-coefficient (centred)	-0.109 (0.068)	0.107 (0.065)
Income * Gini-coefficient	-0.012** (0.005)	-0.010** (0.006)
GDP per capita (control)		0.000*** (0.000)
Ethnic fractionalization (control)		-0.464 (1.355)
Gender (control)		
Male		-0.113** (0.056)
Female		Reference
<i>Random effects</i>		
Country-wave variance (level-2)	0.901	0.910
Country-variance (level-3)	1.400	0.121
Slope variance of income effect	0.012	0.010
Log-likelihood	-70523.264	-67312.103
Wald Chi-Square (df)	35.060 (3)	58.990 (6)
Level-2 N	26	25
Level-3 Country N	10	10
Total N before censoring	31504	30050
Left-wing censored	5856	5583
Right-wing censored	5914	5524
Total N after censoring	19734	18943

\* =  $p < .1$ , \*\* =  $p < .05$ , \*\*\* =  $p < .01$  (two-tailed)

B unstandardized coefficient

Standard errors in parentheses under the unstandardized coefficients

The micro-level variables are group-mean centred

The macro-level variables are grand-mean centred

Source: Aggregated WVS data-file, 1990-2014

## Appendix M: Robustness check – Theil Index, GE(1)

**Table M.1: Random intercept random slopes models of cross-level interaction on support for wealth redistribution between 1990-2014**

Model	M8	M9
	B	B
<i>Fixed effects</i>		
Intercept	5.710*** (0.329)	5.657*** (0.280)
Income (centred)	-0.141*** (0.042)	-0.141*** (0.046)
Theil Index, GE(1) (centred)	-0.867 (2.075)	6.371*** (1.864)
Income * Theil Index	-0.620*** (0.205)	-0.690*** (0.221)
GDP per capita (control)		0.000 (0.000)
Ethnic fractionalization (control)		-3.412*** (1.076)
Gender (control)		
Male		-0.079* (0.046)
Female		Reference
<i>Random effects</i>		
Country-wave variance (level-2)	0.101	0.173
Country-variance (level-3)	0.340	0.000
Wave-variance (level-3)	0.161	0.162
Slope variance of income effect	0.013	0.015
Log-likelihood	-51749.178	-47936.599
Wald Chi-Square (df)	18.580 (3)	40.500 (6)
Level-2 N	15	14
Level-3 Country N	8	8
Level-3 Wave N	3	3
Total N	20202	18767

\* =  $p < .1$ , \*\* =  $p < .05$ , \*\*\* =  $p < .01$  (two-tailed)

B unstandardized coefficient

Standard errors in parentheses under the unstandardized coefficients

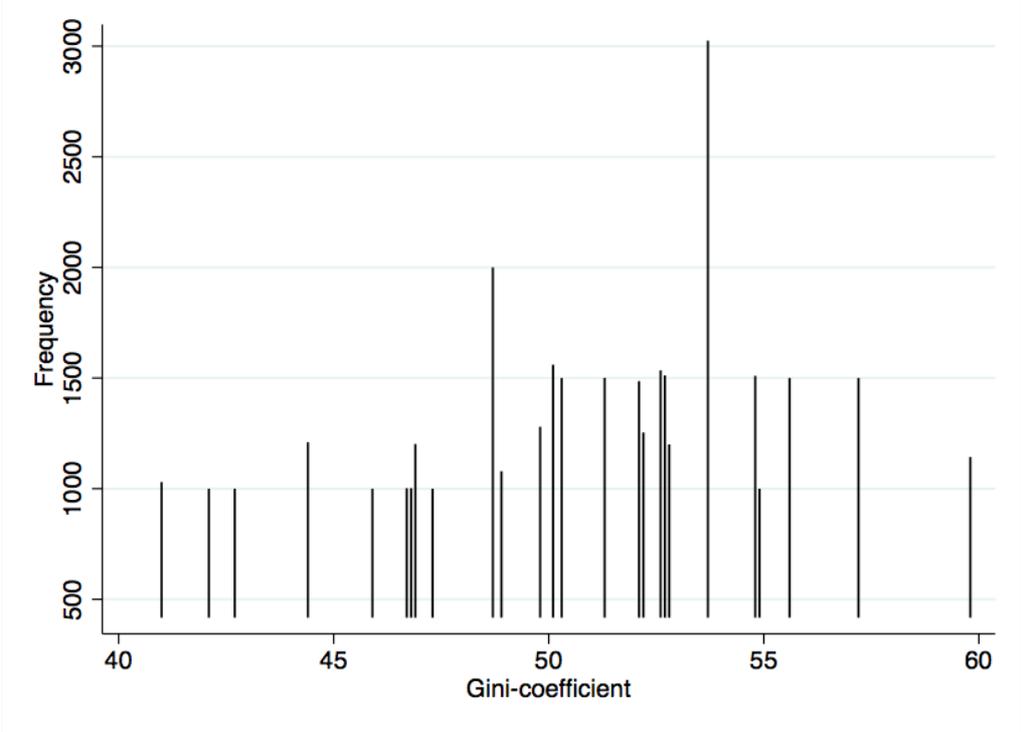
The micro-level variables are group-mean centred

The macro-level variables are grand-mean centred

Source: Aggregated WVS data-file, 1990-2014

**Appendix N: Robustness check – Outliers Gini-coefficient**

**Figure N.1: Spikeplot Gini-coefficient**



Source: Aggregated WVS data-file, 1990-2014

## Appendix O: Robustness check – Political trust dummy-measurement

**Table O.1: Country-wave fixed-effects of political trust as dummy-variable on support for wealth redistribution between 1990-2014**

Model	M6
	B
Intercept	5.358*** (0.097)
Income (centred)	-0.113*** (0.015)
Political trust	
1 (low)	Reference
2	-0.090** (0.043)
3	-0.052 (0.046)
4 (high)	0.007 (0.060)
Income * Political trust 2	-0.056*** (0.020)
Income * Political trust 3	-0.049** (0.020)
Income * Political trust 4	-0.042 (0.026)
Gender (control)	
Male	-0.071** (0.033)
Female	Reference
<i>Additional information</i>	
Log-likelihood	-93523.145
Wald Chi-Square (df)	3323.310 (38)
Total N	36628

This model was estimated with country-wave fixed-effects models with Peru wave 6 as reference category

\* =  $p < .1$ , \*\* =  $p < .05$ , \*\*\* =  $p < .01$  (two-tailed)

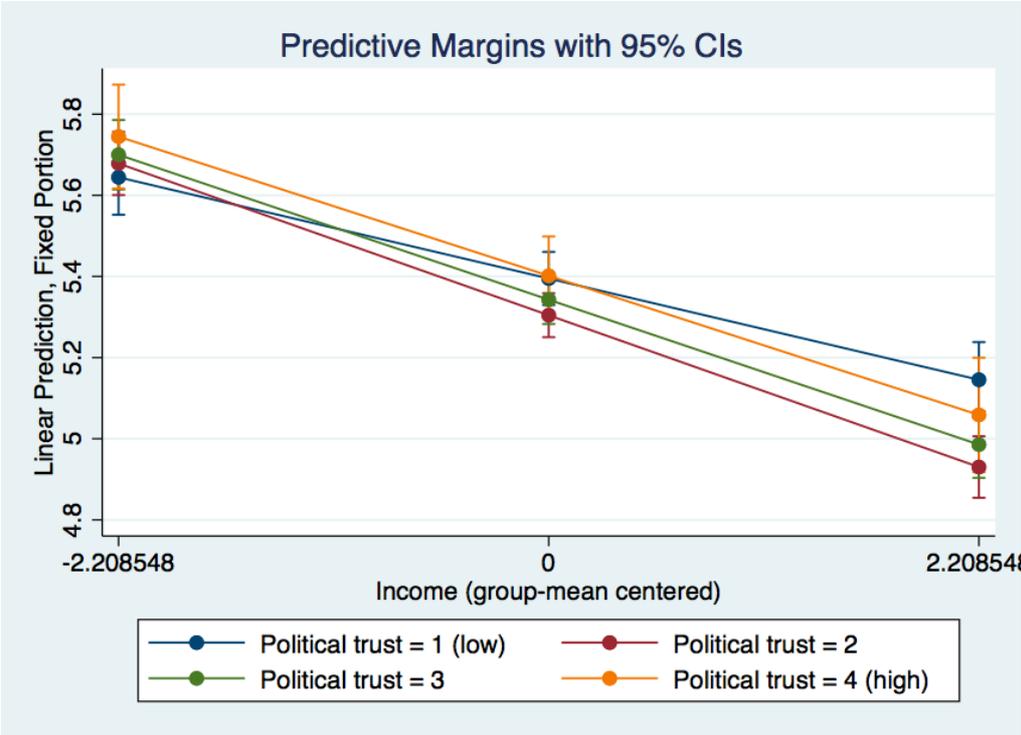
B unstandardized coefficient

Standard errors in parentheses under the unstandardized coefficients

The micro-level variables are group-mean centred

Source: Aggregated WVS data-file, 1990-2014

**Figure O.1: Predicted effect of income on support for wealth redistribution at different levels of political trust**



Source: Aggregated WVS data-file, 1990-2014