The Rhythm of Modernization

Contextual Effects and Within-Cohort Value Change

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INTRODUCTION

This research is about adult change in values and abstract or symbolic attitudes. Its purpose is to analyze the capacity of adults to change over the entire lifespan to adjust to new socioeconomic and political realities. It is a commonplace to consider fundamental psychological dispositions to crystallize during late adolescence and early adulthood. The implications of such an assumption are stability over the lifespan and the constitution of generational groups. Under this paradigm, aggregate value and attitude change takes place basically as a product of generational replacement. In this research I propose a different approach, one which clearly takes into account the possibility of individual change during the entire life course. To do so, I put forward a dynamic model. I consider the dynamics of values and attitudes to be affected by the effect of external or contextual factors like the historical period, as well as internal or developmental forces such as aging or life course events. I will specially focus on the contextual components. If these contextual factors are stable overtime, so will be the values under scrutiny. However, should external factors follow a particular trend, their associated values would reflect it not only by means of generational replacement but through contemporaneous adjustment, namely adult value or attitude change.

The stability of sociopsychological dispositions over the life-cycle has been probably overstated in the empirical literature because many political values and attitudes appear to be rather stable. In many cases, the underlying reason is that they are linked to quite steady exogenous factors, or at least to factors without a particular trend. Moreover, sometimes the methods to measure change are not the best possible ones. To illustrate my argument about the malleability of values, I study a group of orientations attached to an exogenous factor that clearly changes in a particular direction. I analyze the individual modernity syndrome: those values and attitudes involved in the process of modernization. Modernization is a macrosocial transformation which affects different societal spheres, one of which is individual values and beliefs. In this field, cohort replacement is presumed to be the dominant force of change. Consequently, intracohort change is underestimated and seen as a residual possibility. I devote this research to refute this misconception. I argue that value and attitude change takes place at “real-time”, as well as at the slow and progressive rhythm of cohort replacement.

The Research Problem

The purpose of this dissertation is to question the assumption of stability throughout the life course in some of the allegedly more stable sociopsychological dispositions: values and abstract or symbolic attitudes. I want to test people's capacity to learn and change beyond the formative years. Especially in the field of political socialization, the "impressionable years" model of learning has been widely accepted. This model predicts fluctuations in political orientations during adolescence and young adulthood, followed by a period of crystallization, and then by stability from thereon (Jennings 2007). The main implications of this model are constancy in political orientations over the life course and the emergence of generations. In this vein, Alwin and Krosnick (1991) talk about the "aging-stability hypothesis" which claims that people change their mind little as they age. The idea of persistence has been dominant in some areas of political science, with prominent examples like the political culture thesis (Almond and Verba 1963), that postulates the relative stability of national communities, or the theory of modernization of Ronald Inglehart (1977) with its "generational hypothesis" of value change. Inglehart understands the change in values as a gradual process linked to generational replacement (Abramson and Inglehart 1986, 1987, 1992 and 1994). Following the "impressionable years" model and the "aging-stability" hypothesis, change is caused mainly by the death of old generations carrying old values that are substituted progressively by young ones with new orientations. Is there any room in this scheme for individual value change over the life cycle? Are adults able to learn new values and attitudes to adapt to new contexts? Different evidences point to the capacity to learn and change during the whole life period (Sigel 1989). Even people completely socialized under authoritarian regimes are able to change and adapt their views to a new democratic context (Mishler and Rose 2001, 2002, 2007). Flexibility and change in some abstract attitudes seems to be higher than predicted by the "impressionable years" model (Andersen and Fetner 2008a).

The aim of this dissertation is to study the amount of value change that takes place during adult years. The field of values, in comparison with attitudes or opinions, has been traditionally one in which the hegemony of the "impressionable years" model has remained relatively unquestioned. As sociopsychological objects, attitudes and opinions

are thought to be more on the surface and become more easily influenced by the context. On the contrary, values are considered to be deeply rooted in individual's mind. I argue that even values can change over time, a possibility towards which other value theorists different from Inglehart, such as Rokeach, are much more open. There is still theoretical discussion about the meaning and conceptualization of values. I tend to understand values in a broad sense, which also includes Glenn's abstract attitudes (1980), or Sear's symbolic attitudes (1983). I choose Inglehart's and Inglehart and Welzel's theory of individual modernity to test my hypotheses, since it gives a crucial role to generation effects and predicts constant changes throughout time. I confront two perspectives of analysis, the cultural theory based on the "impressionable years" and the institutional theory that emphasizes adult learning. Finally, I assume a third point of view: the lifetime learning theory that considers generational effects to be crucial, but understands that individuals learn and change throughout the whole life cycle. In my analysis, I use time-series data from repeated cross-sectional surveys (WVS and EB) to study the evolution of the main indicators Inglehart used to measure the modernization of values across industrial democracies. To be able to verify my hypothesis, I apply a set of statistical techniques to identify age, period, and cohort effects, as well as those produced by generational replacement and the composition of cohorts. First, I analyze postmaterialist values, the most representative indicator of Inglehart's theory of modernization. I confirm my hypothesis of lifetime learning, contradicting Inglehart's conclusions. Given that the indicator of postmaterialism has been criticized due to measurement problems, next I center my attention in the study of alternative measures of the modernization process: religious values and practices, and moral values. In both cases, the evidence I will provide indicates that the "impressionable years" model is clearly insufficient to account for the profound transformations occurred among many advanced industrial democracies during the last thirty years, and that we should reconsider the capacity to learn throughout the entire life span.

Outline of the Research

The first part of this dissertation is devoted to define the theoretical framework of analysis and the hypotheses that guide the research. I review the main definitions of values and discuss the conceptual differentiation between values and other

sociopsychological dispositions such as attitudes. I finally favor a lax conception of values, which is able to include abstract and symbolic attitudes. I confront Inglehart's value theory with the other two main approaches to the study of values, those of Rokeach and Schwartz. My purpose is to contextualize Inglehart's theory within the main schools of values. These different value theories assume some degree of stability and exogeneity in values; however Inglehart's approach appears as the most restrictive in terms of value stability. Next, I discuss how the main schools of values envision change and the mechanisms that may be involved, and review some further empirical findings of value change during adulthood. Beyond theoretical assumptions, I argue that value change has not yet received enough empirical attention, and therefore remains as a more or less open field. I also discuss how political socialization studies have touched on the issue of stability and change of individual orientations over the life course, and the most important models that have emerged. I comment on the main three approaches to political learning of values and attitudes: the culturalist, the institutional, and the lifetime learning models. The first gives a central role to the impressionable-years thesis and the building of generations. The second promotes an idea of a self-actualizing individual who has a weak link to past impressions. The lifetime learning approach combines the two previous points of view. I subscribe this last approach, and define a dynamic model to predict the evolution of values and attitudes. Finally, I present Inglehart's theory of individual modernity more in depth. Postmaterialist values are just a part of a broader syndrome. My focus is not only on how postmaterialist values can change, but also on how other dimensions of the more general individual modernity syndrome evolve.

I try to test my assumptions about adult change studying a group of values which, according to the literature, are supposed to follow the culturalist model. These values are inscribed in the so-called individual modernity syndrome, those psychological dispositions involved in the process of modernization. I review the different versions of individual modernity, and center my attention in the latest of them, embodied by Inglehart and Welzel's human development theory. I discuss the appropriateness of such an object of analysis. Individual modernity constitutes a body of values linked to an exogenous factor (socioeconomic development) which is supposed to follow a trend, making it most suitable to test my dynamic model of values. Therefore I put my dynamic model to the test with the study of the so-called individual modernity values.

First, I analyze materialist/postmaterialist values for being the most popular indicator of individual modernity. However, the measure of postmaterialism has been accused of containing potential problems of reliability and validity, so I study alternative indicators of the two dimensions of individual modernity of which postmaterialistic values are just a part: the human development axis (survival / self-expression values), and the traditional / rational-secular values. If these items should also follow the lifetime model of learning, my hypotheses would be tested successfully and robustly.

In the second part I define which data and methods I employ. I use the international repeated cross-sectional data from the Eurobarometer Survey series (1970-2002) and the World Value Surveys (1981-2007). Inglehart himself has relayed on this very same sources to draw his conclusions. By applying an alternative approach and different statistical tools to the same data, I will refute his statements. In my analysis I perform international comparisons focusing on similar cases: a group of relatively wealthy nations experiencing modernization processes. I apply the logic of time-series analysis to study repeated cross-sectional data of individuals nested within countries, time points or/and generational groups. I focus on reviewing Inglehart's measure of postmaterialistic values, and other items related to individual modernity. I have to face a number of technical difficulties when trying to disentangle these dynamic phenomena. I review the discussion about age-period-cohort effects, cohort replacement effects and composition effects. My objective is to identify and quantify the impact of adult learning on value and attitude change among the rest of related phenomena. There are a set of methodological strategies to deal with this issue which I briefly explain in this part of the dissertation. I choose aggregate time-series analysis to cope with the autocorrelated nature of the errors, and different types of time-series cross-section models (TSCS) that use random coefficients. I employ multilevel models to control for the nested structure of the data, to model contextual effects understood in terms of time, space and generations, and as a way to overcome the age-period-cohort dilemma.

The third part of the dissertation is devoted to test the capacity of adult change in the most crucial indicator of Inglehart's individual modernity syndrome: postmaterialist values. First I review the theory and discuss the measurement of the concept. I explore the evolution of this value over a thirty years period and across six European countries. I replicate a method developed by Abramson and Inglehart, consisting in the creation of

a counterfactual society, to test the effect of cohort replacement against that of adult learning. I apply aggregate time-series techniques to describe the dynamics of postmaterialist values and predict its evolution as a function of exogenous factors. I demonstrate that the increase in postmaterialist values across these six countries and over this wide period of time comes mainly from adult change, and not just from cohort replacement. However, the particular indicator of postmaterialism that I use, widely employed by Inglehart, has been criticized for containing potential measurement errors. To base exclusively on it the main argument of my thesis would therefore be precarious. For that reason, in parts four and five of the dissertation I study alternative indicators of the process of modernization also studied by Inglehart himself. My purpose is to extend the validity of my research and to perform a more robust test of my hypotheses.

To test the soundness of my analysis of postmaterialistic values, I turn my attention to alternative indicators of the individual modernity syndrome which do not necessarily suffer from the same kind of measurement problems. If they should behave in a similar way, it would constitute a robust test of my hypotheses about adult value change. In the fourth part, I explore some items of the second dimension of Inglehart-Welzel individual modernity: the traditional / rational-secular axis of values. I focus on analyzing indicators of the secularization process, one of the major changes associated to modernization. I study the evolution over time and across countries of three fundamental indicators of religiosity: attendance to religious services, the importance of the religion and God in the life of the respondent. I begin justifying the study of religious values and practices within the framework of the dissertation, and then I discuss the most relevant theories of religious change affecting the Western world, this is, secularization in its different versions, the theory of the religious market, and the individualization thesis. I document the debate about the effects of age, period, and cohort on religious indicators, centered primarily on the study of the US case, and the main empirical contributions in the literature. First I analyze church attendance using the repeated cross-sectional data from the Eurobarometer for a set of West European countries. Applying the counterfactual simulation developed by Abramson and Inglehart (1992) for the case of postmaterialism, I show how the drastic reduction of church attendance in many European countries over the last 30 years comes mainly from a change in real-time, and not only from generational replacement. Next, I center my attention on the study of the Belgian case, a country with an exceptional reduction

in church attendance rates. In this case, the available data allows the application of the most appropriate statistical models to identify the effects of age, period, and cohort with data of repeated cross-sections: cross-classified random effects model, a specific type of multilevel analysis. Using this technique I am able to identify the presence of clear period effects that confirm my hypotheses, in addition to an age effect ignored by Inglehart.

In the last sections I study religious values: the importance of religion, and the importance of God in the life of the respondent. The latter is a key indicator of Inglehart's rational-secular dimension. I use data of the World Value Survey for a cluster of 28 OECD countries that have experienced processes of modernization throughout the period that goes from 1981 to 2007. Although the data base covers a wide period of time, the number of waves is insufficient to apply proper cross-classified random effects models. Therefore, I follow an alternative strategy that still allows me to simultaneously model age-period-cohort effects using a hierarchical regression that takes advantage of the statistical power provided by the number of countries included in the sample. The individual-level data is nested within waves and countries, and in my models I incorporate these three sources of variance: between individuals, countries, and overtime. By doing so, I am able to test at the same time hypotheses at the individual and country levels, as well as theories of change. Multilevel dynamic explanations of this kind are uncommon in the literature of sociology of religion. At the static societal level I confront the theory of secularization based on existential security, with the historical religious background approach, and the religious market hypothesis. At the dynamic societal level, I test the effects of changes over time in country-level covariates linked to modernization: are countries experiencing faster development quicker in their secularization process? At the individual level I add age, cohort and family formation effects, together with the usual covariates of religiosity. The results at the country-level confirm the validity of the secularization theory based on existential security, and income inequality emerges as the key explanation for differences in religiosity among already wealthy countries. Although there are signs of a religious revival, countries experiencing faster modernization processes see how their religiosity levels decline quicker, even when controlling for cohort replacement effects. In fact, changes happen in real-time, contradicting Norris and Inglehart's (2004) assumptions.

At the individual level, apart from the well-known generational effects, relevant life-cycle and family formation influences are identified confirming the capacity of individuals to change along the continuum of life in such fundamental elements as religious values.

The fifth and final part analyzes the capacity for adult change in moral values strongly influenced by religious dogmas. In particular, I center my attention on tolerance of homosexuality. First, I explain the relevance of this indicator within the frame of Inglehart's theory: it is one of the main items composing the survival/self-expression factorial axis, what makes it especially appropriate as an alternative indicator of postmaterialism in which to test my hypothesis. In fact, it is intensely correlated with postmaterialist values, and is sometimes employed as an indirect measure of them (see Andersen and Fetner 2008b). Next, I present alternative theories that could also explain the variation between individuals, countries and over time in attitudes to homosexuality, in particular Uslaner's theory (2002) of social confidence that bonds tolerance with the levels of country's income inequality, Lipset's theory (1959) of the working-class authoritarianism, rejection of "outgroups" by lower status groups (Andersen and Fetner 2008b), sexual prejudice (Herek 2000), as well as the usual determinants of conservative attitudes. As I use the World Values Survey data, I apply a similar analysis to the one performed on religious values. First, I employ regression techniques to separate period from generation effects country-by-country. Then, I apply multilevel models distinguishing among individuals nested within countries and moments in time. I take into consideration a set of hypothesis about how contextual factors interact with individual characteristics: more specifically, how the level of development of the countries influences the effect of social class on tolerance, and how economic inequality at the contextual level modifies the impact of several individual level predictors. Once the proper controls are introduced, period effects remain as decisive predictors of the evolution of attitudes towards homosexuality across all developed countries. Aggregate change has been so acute that is materially unfeasible to attribute it to cohort replacement alone, as I demonstrate. This attitude has experienced such a drastic change over time in the countries analyzed that is impossible to explain it without considering the lifetime learning model.

1. Theory

"Most researchers assume values to be relatively stable across the life course after being shaped through late adolescence. This is, however, an empirical question, and not much work has directly engaged this issue."

Hitlin and Piliavin (2004)

"We know too little about the stability of values and the extent to which they are exogenous to political attitudes. "

Feldman (2003)

1. THEORY

In this theoretical part I review the three main theories of values – with special emphasis on Inglehart's approach, the (still scarce) literature on value change, the contributions of socialization studies to understanding the dynamics of sociopolitical orientations, and Inglehart's general theory of modernization upon which I base my empirical analysis. First I reflect on what values are and the main approaches to the study of values, those of Rokeach, Schwartz, and Inglehart. I talk about what values are not, and the considerable overlapping between values and attitudes, especially those attitudes referred to abstract or symbolic objects. I present some of the problems that arise in value measurement. I discuss the place of Inglehart's theory of values within the whole frame of value theories. I center my attention on the study of the dynamics of values and abstract or symbolic attitudes, as they are supposed to be the more stable psychological dispositions. I argue that even those allegedly stable elements are susceptible of change in the course of a lifetime. Value theories share the idea that values should remain rather constant after their acquisition. Is there empirical evidence supporting this assumption? The study of the dynamics of values is a field that still requires further development, and can be considered to be at its infancy. I analyze the causal mechanisms at stake in value change from the point of view of the three schools of values. Schwartz's talks about acclimation and compensation mechanisms. Rokeach, who considers that values can change at any moment over the life course, refers to the importance of feelings of self-dissatisfaction or discomfort. Actually, a branch of the literature investigates how the mere introspection about one's own values may cause value change. Additional research explores the effects of age-period-cohort components on values, indicating the capacity of values to change as a result of period or life course pressures. Finally, I focus on Inglehart's view of value dynamics. He considers values to remain stable after being acquired at a particular period of the life course: the "impressionable years".

Next I discuss value and attitude change from the point of view of socialization studies. The dominant point of view in this field has been to consider individual sociopolitical orientations to remain rather stable once they crystallize after the "impressionable years" phase. A contrasting view is the "openness to change" approach, which favors a greater malleability of values and attitudes. I argue that research on political

socialization might have overrated the stability of sociopsychological dispositions given its focus on the study of stable contexts. This is the reason why I choose values and attitudes related to an ongoing macro-transformation: the modernization process. The field of political socialization might have not been that receptive yet to proofs of adult learning coming from the study of transitions to democracy. Recent evidences in this area point to the capacity of individuals to learn and adjust to new political realities over the entire lifetime. In the last part, I present Inglehart's general theory of modernization. This theory is a good case to test the capacity of values to change over the life course. Modernization can be understood as a multi-trait syndrome that encompasses different values and attitudes of which postmaterialism is just one component. Inglehart supports the idea that major social change in the direction of cultural modernization would be driven by generational replacement. In my posterior analysis, I try to refute this assumption in light of the empirical evidence. To conclude, I present the general hypotheses that will guide my research.

Theories of Values

Value research is a multidisciplinary quest. Values have been subject of study of anthropologists, philosophers, economists, psychologists, sociologist and political scientists. However, any unified definition of the value concept seems still elusive, neither cross- nor within-disciplines (see van Deth and Scarbrough 1995, Karp 2000, Feldman 2003, Hitlin and Piliavin 2004). Apart from the lack of coherence among conceptualizations, there is also debate regarding how values should be measured. In addition, the term "value" is often conflated with other sociopsychological concepts such as attitudes, norms, or beliefs. Either way, values are acknowledged to play an important role in the social sciences. The idea that culture and values matter can be traced back to Weber's *Protestant Ethic and the Spirit of Capitalism*. In sociology, values are often seen as instruments by which social structures regulate the actions of individuals (Karp 2000). In this sense, values help to solve the conflict between individual and collective interests, encouraging people to bypass their egotistic desires to engage in social cooperative behavior. In political science, values are at the core of some of the most prominent traditions like the political culture theory, initiated by Almond and Verba with the *Civic Culture* (see Halman 2007). These authors underlined the importance of the political orientations of individuals, besides the institutional and constitutional features of political systems. Also relevant to political science is the role values play as building blocks of ideologies (Maio et al. 2006). Ideologies are systems of values and attitudes organized around abstract ideals (e.g. conservatism or liberalism), which are able to frame political debate and influence political choice. More generally, values are thought to shape political attitudes and to be important determinants of political behavior (Zaller 1992, Miller and Shanks 1996, Feldman 2003). As a result, they are often assumed to remain rather stable over time and to be exogenous to attitudes and behavior.

Despite the diversity of definitions, values are generally understood as abstract ideals that people consider important in their lives and/or for society (Rokeach 1973, Schwartz 1992, Inglehart 1977). Smith and Schwartz (1997) summarized the main traits common to different definitions of values into five features. First, values are beliefs, but instead of being objective cold ideas, when activated, they become filled with feeling. Second, values refer to desirable goals (e.g. equality) and to the modes of conduct that promote

these goals (e.g. fairness, helpfulness). Third, values transcend specific actions and situations. Fourth, values serve as standards to guide the selection or evaluation of behavior, people, and events. And fifth, values are ordered by importance relative to one another. The ordered set of values forms a system of value priorities.

Values and Attitudes

Values are often conflated with other subjective constructs such as attitudes, beliefs or opinions. Sometimes these psychological dispositions are used synonymously as it seems not to be a unanimous consensus about their conceptual differences (see van Deth and Scarbrough 1995, Oskamp and Schultz 2005 among others). The problem, as Halman (2007) acknowledges, is that most theories of values have not devoted enough efforts to distinguish values from other similar concepts. Nevertheless, values are seen as more basic or primordial than these other type of features. Here I am especially concerned with the distinction between values and attitudes. While values are abstract ideals that function as important guiding principles, attitudes are tendencies to evaluate an object in a positive or negative way (see Maio et al. 2006). The object of attitudes can vary from more concrete (e.g. a brand of car, or soft drink) to more abstract (e.g. divorce, homosexuality). Values, in contrast, focus on purely abstract ideals, such as freedom, helpfulness, or equality. Following a hierarchical structure, values are then considered more basic than attitudes: "A value is seen to be a disposition of a person just like an attitude, but more basic than an attitude, often underlying it" (Rokeach 1968). Values are supposed to be deeply rooted motivations which guide or explain attitudes and influence behavior. The same type of argument applies to the relation between values and other theoretical concepts such as norms, beliefs, or opinions.

However, some authors question the distinction between values and attitudes. For example, Glenn (1980) is somehow skeptic about establishing a strict separation among the two concepts. To him, the problem of distinguishing among values and attitudes arises when the object to which the attitude is referred is not something tangible or concrete (e.g. material things, persons, organizations), but abstract and conceptual (e.g. abortion, marriage, or liberalism). Although values are supposed to be more abstract than attitudes, this distinction is hard to apply when the object of certain attitudes is also

highly abstract and general. Therefore, Glenn (1980) concludes that it is more useful to define a value as a special kind of attitude, one with a very abstract general object. In his opinion, values are highly abstract ideas about what is good or bad, right or wrong, desirable or undesirable. In a similar vein, Sears (1981) uses the term "symbolic attitudes" to refer to a specific type of attitudes which are more abstract and stable. According to his theoretical definition, attitudes range along a continuum from highly symbolic to nonsymbolic. Symbolic attitudes differ from nonsymbolic ones in their level of abstraction and their stability over the life span. Symbolic attitudes are developed through conditioning processes in which attitudes acquire a strong affective basis, with little informational or cognitive content. In contrast, nonsymbolic attitudes are assumed to be formed during adulthood, primarily as a consequence of knowledge acquisition and information integration. As a result, symbolic attitudes are thought to be highly stable and resistant to change over time, whereas nonsymbolic attitudes are more likely to change as a result of persuasive arguments and political events.

In the practice of survey research the distinction between values and attitudes is not always taken into account (see Halman and de Moor 1994, Davidov et al. 2008). Fahey et al. (2006) argue that one should not worry much about the issue of terminology, as precise definitions will always continue to be elusive. Here, I am not especially concerned about drawing and following an exact definition of values, which still seems an impractical or unfruitful endeavour. I tend to be flexible and assume Glenn's approach: values and attitudes are very similar when the latter refer to rather abstract objects. My purpose is to focus on values as well as on abstract or symbolic attitudes to study their capacity of change over time. I study this type of features precisely because they are supposed to be rather stable. What I want is to question this statement, and test how even the supposedly most stable features can change within an individual's lifetime.

Schools of Values

Among the many conceptualizations of values that have been proposed, the most influential ones are often considered to be those of Rokeach, Schwartz and Inglehart

(see Karp 2000, Hitlin and Piliavin 2004, Feldman 2003, Maio et al 2006).[1] Inglehart focuses on people's perceptions of values that are important for society, whereas Rokeach, as well as Schwartz – who builds on the work of Rokeach, refer to what values are important to oneself or to others. In this sense, Rokeach and Schwartz follow a more individual-oriented approach, while Inglehart is more centered on sociopolitical values. A similar interpretation can be found in Karp (2000) who considers value research to follow two different approaches: one at the micro-level, focused on individual values, concerned with what values are, how they are measured, how they vary, and how they affect behavior; and a second approach that operates at the macro-level of cultures and societies. These conceptualizations of values also differ with respect to the idea of value stability and change. Rokeach considers values to be somewhat capable of changing over the lifespan, despite their presumed overall stability (Maio et al. 2006). Conversely, Inglehart departs from stronger assumptions about value stability across the life course, probably as an overreaction against Converse idea (1964) that beliefs of mass publics are highly random and unstable (see Rokeach 1974).

Rokeach

Milton Rokeach's value research has been one of the most influential during the last decades. In his works, he provided a clear conceptualization of values and value systems, developed a measurement instrument that helped standardizing posterior empirical research, demonstrated the impact of value systems on attitudes and behavior, and studied processes of value change (see Feldman 2003). One of Rokeach's major contributions was to emphasize that values do not exist in isolation but are embedded within value systems. He defined values as "enduring beliefs that a specific mode of conduct is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence" (1973). In this sense, Rokeach's view of values is individual-oriented, suggesting that values refer to oneself or others. Values are considered enduring beliefs, as well. In this respect, values should be somewhat stable as they are learnt in an absolute manner, and people are taught to accept them without question (see

[1] Other contemporary relevant perspectives are theories of individualist and collectivist values of authors like Hofstede or Triandis, or the experimental-based approach on the study of social values (see Yamagishi 1995).

Maio et al. 2006). However, Rokeach also argues that values can change as people learn to make decisions favoring one value over another. In this sense, values are at least somewhat capable of change, despite their overall stability. His definition suggests an ordering of competing values as well.

Rokeach (1973) developed an instrument (the Rokeach Value Survey) to measure a set of values he considered to be universal and transsituational. He distinguished 18 values that refer to modes of conduct, called instrumental values (e.g. politeness, honesty, helpful, loving, or obedient), from 18 values that refer to end-states of existence, named terminal values (e.g. freedom, equality, exiting life, a world of beauty, or wisdom). In his measurement instrument each value item was ranked by subjects according to its importance as guiding principles in their lives. The procedure was designed to identify priorities among competing values. In his empirical analysis, Rokeach demonstrated that values were important determinants of attitudes and behavior (see Karp 2000, Feldman 2003, Maio et al 2006). For example, people who value equality were more favorable of equal rights policies (e.g. affirmative action) and behaviors (e.g. donate to charity). He also emphasized the idea that values operate as a system and not as isolated entities. Many other researchers such as Schwartz have used Rokeach's seminal contribution to improve on the study of values.

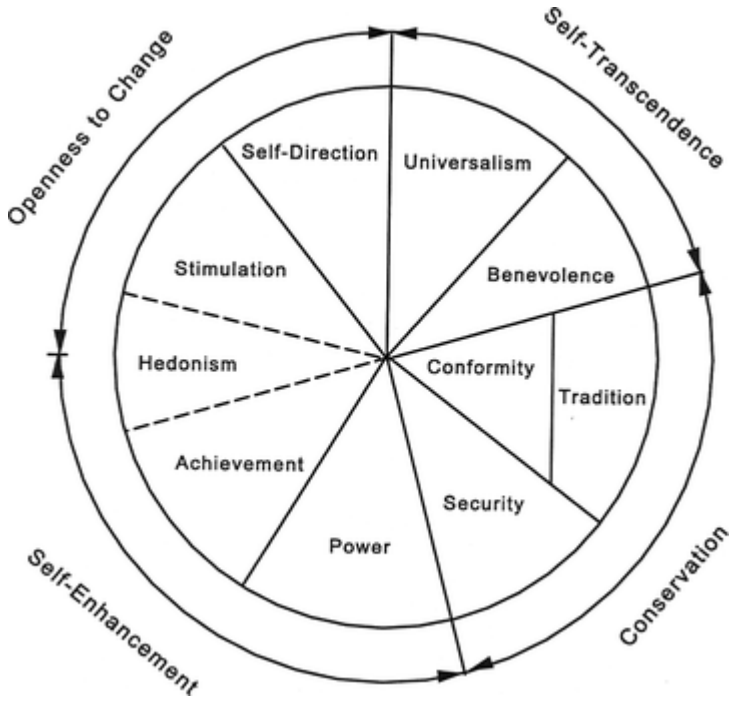
Schwartz

Schwartz's theory of values is considered an expansion of Rokeach's work (see Maio et al 2006, Karp 2000, Hitlin and Piliavin 2004 among others)[2]. It is also acknowledged to be the new standard for research in values, especially in the field of psychology (Feldman 2003). Schwartz understands values as abstract ideals that are important guiding principles in one's own life. He developed his theory aiming to uncover the types of values that should be found in all human societies. To do so, Schwartz departs from Rokeach's remark that values should derive from basic biological and social needs[3]. To Schwartz (1992), values are cognitive representations of three universal human requirements: the need of individuals as biological organisms, requisites of

[2] It is considered so even by Rokeach himself (see Rokeach and Ball-Rokeach 1989).
[3] That Rokeach did not develop further.

coordinated social interaction, and survival and welfare needs of the group. These needs become embodied in values that express ten types of basic motivations: universalism, benevolence, conformity, tradition, security, power, achievement, hedonism, stimulation, and self-direction. As shown in figure 1.1, these ten values can be represented in a circular structure so that the closer two values are in the rounded classification, the more similar the motivations that guide them, and vice versa.

Figure 1.1 Structural Relations among the Schwartz's Ten Motivational Types of Values.



Source: Based on Smith and Schwartz (1997).

Schwartz basic values are in turn grouped within four higher order values: self-enhancement, self-transcendence, openness to change, and conservation values; which constitute two different dimensions. Self-enhancement and self-transcendence form the two opposite poles of one of these dimensions. They reflect the confrontation between values oriented towards the pursuit of self-interest and values oriented to a concern for the welfare of others. The second dimension contrasts openness to change with conservation, and indicates the degree to which individuals are motivated to engage in independent action and willing to challenge themselves for both intellectual and emotional realization (see Schwartz 1992, Karp 2000). Schwartz developed his model

not deductively but empirically, applying multidimensional scaling techniques (smallest space analysis) to survey data from many different countries where he used his measurement instrument: the Schwartz Scale of Values. Unlike Rokeach, he employed rating scales instead of rankings to measure how important is each value in the life of the respondent. One of Schwartz's major findings is that this system of values seems to be essentially the same across all countries in the world, although the emphasis given to particular values shifts from nation to nation. Schwartz's model shares with that of Rokeach a similar view about value stability and value centrality in the causal chain as determinant of attitudes and behavior (see Feldman 2003, Maio et al. 2006).

Inglehart

The third most influential approach to values is that of Ronald Inglehart. However, his scope is somewhat more restricted than the former two perspectives. Rather than proposing a theory to account for the entire universe of values, Inglehart's original purpose was to explain the reasons for the political shifts of Western democracies during the late 1960s and 1970s (Rossteutscher 2004). Inglehart departed from the political culture approach in political science, and proposed a revised theory of modernization (see Halman 2007, Welzel 2007). He claimed for the importance of cultural factors such as values, beliefs, and preferences of the population, in explaining the dynamics of political systems. Inglehart's main interest was studying the association of values and economic development, and how changes in economic conditions are reflected in different value priorities, which in turn end up affecting social and political structures. Whereas Rokeach's and Schwartz's definition of values explicitly suggests that values can refer to oneself or others, Inglehart focused on people's perceptions of the values that are important for society. His main concern was with societal values, especially those related to the political domain. In this sense, Inglehart understands values as perceptions of a desirable order, which influence whether a political situation or event is experienced as favorable or unfavorable, good or bad (Inglehart and Klingemann 1979).

Inglehart's model departs from both a psychological and sociological perspective (see Maio et al. 2006). From the psychological perspective, it is based on Maslow's theory

about the hierarchy of needs, which states that people only care about higher order needs when they have already fulfilled the most basic ones. From a sociological perspective, Inglehart argues that the rise of economic development and the welfare state in the Western world has led to decreasing concern with materialistic needs (the most basic ones), such as economic and physical security, and more concern about postmaterialistic needs (the higher order ones), such as freedom, self-expression, and quality of life. In his view, this change in people's value priorities takes place gradually, as older generations are slowly replaced by younger ones. He strongly supports the idea that socialization during early adulthood –the "impressionable years" epoch– have a stable and lasting effect on values, so that major societal shifts in materialist/postmaterialist values have to come necessarily from generational replacement. Inglehart has tested his theory surveying a wide range of societies around the globe using the World Values Survey questionnaire. Among a diversity of values, attitudes and behaviors, his instrument includes materialist/postmaterialist scales which request respondents to rank several materialist values (e.g. fight crime, maintain economy) and postmaterialist values (e.g., give people more say in government decisions, protect free speech) according to their importance for their country. Inglehart is therefore aligned together with Rokeach in the side of those who prefer rankings, instead of ratings, for the measurement of values. The capacity of materialist/postmaterialist values to affect attitudes and behavior has been proved extensively by Inglehart himself and many other researchers.

Values Measurement

The measurement of values is a controversial issue. An ongoing debate still confronts the use of rankings (Rokeach 1967, 1973) with the use of ratings (Schwartz 1994). Those who defend rankings argue that values are often in competition with one another. The use of rankings helps to elicit the underlying order of value priorities, as individuals are forced to choose between competing options. However, the advantages of rankings have been questioned (see Alwin and Krosnick 1985, and Schwartz 1992). Schwartz (1994) claims for the superiority of ratings over rankings given that values do not always need to be in competition. In this sense, ratings do not force to discriminate among equally important values. Furthermore, sometimes people when forced to rank

values, may make trivial distinctions between values rendering lower validity of the estimates (Maio et al. 1996). Besides that, ratings have additional statistical properties: they allow the use of longer lists of values, as well as of negative evaluations. Moreover, ranking values can be difficult and demanding for respondents. As a critique to ratings, however, is the fact that many values can be considered potentially desirable, and this may produce a lack of variation across ratings. Rokeach, with his instrumental and terminal lists of values, as well as Inglehart, with his materialist/postmaterialist batteries, use rankings, whereas Schwartz chooses ratings for his basic human values scale instead. Nonetheless, current literature in the field of values seems to be increasingly using ratings.

Hitlin and Piliavin (2004) also mention the problem of accessibility as an additional measurement concern. They argue that in the real world people are not always aware of their own values, despite some conceptualizations of values understand them as "conscious representations of needs", especially those with a psychological background such as Rokeach's or Schwartz's. Hitlin and Piliavin (2004) indicate that academics tend to care more about abstract issues than the ordinary citizen. When people have to respond survey questionnaires of a very abstract nature, the results could end up being somewhat artificial or unreliable. Abstractness, lack of context, and the assumption that people is conscious of their own values, they argue, can lead to measurement problems. In view of these flaws, Schwartz seems to have corrected his initial instrument giving birth to a new and less abstract one, the PVQ (see Schwartz and Bardi 2001). This whole issue brings about an inherent dilemma of value research: measurement of values is usually by self-report, and verbal self-reports are not necessarily valid indicators of an underlying phenomenon (see Hitlin and Pitiavin 2004). This setback is also shared with the study of attitudes, but it is possibly more acute in the case of values since they are more abstract in nature. Values are a subjective or intersubjective phenomenon; therefore they can only be postulated or inferred as they are not directly observable. This is probably the reason why values still remain a more or less open concept.

A methodological issue related to the former debate is whether to rely solely on direct measures of values, or to use also indirect ones. In Rokeach's and in Schwartz's measurement instruments, as well as in Inglehart's materialist/postmaterialist values scale, people have to respond more or less directly what their values are. This is in tune

with Saris and Gallhofer (2007) methodological advice of measuring values directly in survey questionnaires by means of importance statements. However, values could also be measured indirectly, finding patterns across sets of less abstract attitudes, beliefs or behaviors. Following this idea, Van Deth and Scarbrough (1995) stated that values are non-empirical conceptions of the desirable, meaning that they cannot be measured directly. These authors say that values are to be treated analytically as hypothetical constructs used for heuristic purposes without any presumption about their empirical status. Van Deth and Scarbrough explicitly mention that researchers can establish the empirical relevance of these constructs by uncovering some pattern among attitudes. A set of patterned or constrained attitudes they consider to be a value orientation. It is in this sense, that values are thought to be more general than attitudes, as they are constructed by finding patterns among attitudes. Inglehart seems to follow this conception at least in part of his works (1990, 1997 or 2005 with Welzel) where he uses exploratory factor analysis to uncover the underlying dimensions of modernization. Using an inductive approach, Inglehart identifies the value dimensions of modernization by applying principal component analysis to a heterogeneous group of items which include attitudes, beliefs and behaviors[4]. Actually, many conceptualizations of values assume that the adherence to a specific value implies a tendency to act accordingly. For instance, someone for whom religion is very important would tend to go to church often. From this point of view, it also makes sense to measure values indirectly, as latent constructs derived from the way in which people behave or evaluate different aspects of the world.

Hitlin and Piliavin (2004) mention an additional measurement problem: the effects of the context in which values are measured. Context may be important in influencing how people fill out value surveys, as different value systems could be activated in different situations. This suggests that the abstract nature of Rokeach's and Schwartz's original inventories influences the values of people report as being important. The more abstract and artificial the survey question, the more likely it could be influenced by the context

[4] The criteria to include items in Inglehart's exploratory factor analysis could be questionable. Virtually every item of the survey is included, irrespective of its nature and whether it is an attitude, an opinion, a behavior or whatever other feature. Then it is possible to mix together sociopsychological objects which are inherently different, such as satisfaction with life, happiness, interpersonal trust, participation in a political protest, or importance of God in respondent's life. Some questions may appear at this point. What do these factors really mean? Is it appropriate to operate with factor scores that we do not know exactly what they represent? A converse way of proceeding would have been to use confirmatory factor analysis to try to validate a theoretical construct of values.

of the survey. Finally Hitlin and Piliavin (2004) refer to methodological concerns with the study of values over the lifespan when dealing with age, period and cohort effects. They consider that more work is needed in that area. This dissertation is also an attempt to contribute in this direction.

Values Assumptions

So far I have presented what values are, briefly outlined the three most important approaches to the study of values, and a number of problems that arise in values' measurement. Although different in some respects, the main three approaches share the idea that values are rather stable and exogenous to attitudes and behavior. As Feldman (2003) argues, these assumptions are needed in order to consider values as enduring standards that shape attitudes and behavior. However, both stability and exogeneity are to a certain extent theoretical assumptions derived from the very definition of values which still remain an open empirical question (see Feldman 2003, Maio et al. 2006). Not enough research has yet directly addressed the issue of stability and change in values (Feldman 2003, Hitlin and Piliavin 2004), or the extent to which values are actually influenced by attitudes and behavior instead of the reverse (Maio et al. 2006). As I will show in the next section, research is inconclusive with respect to value stability, with some studies suggesting malleability while others constancy. Therefore, it seems clear that more empirical evidence on the stability of values is needed. With respect to exogeneity, some research indicates that values can also be endogenous and become influenced by attitudes (McCann 1997). Seligman and Katz (1996) present evidences on how value priorities may be affected by contextual factors rather than being stable structures. A possible endogeneity of values could also be of interest for the study of stability. Value shifts might be a function of cumulative changes in attitudes or behavior, which are more malleable and could also be more affected by contextual conditions.

I choose to study value change precisely because values are supposed to be rather stable. My purpose is to test that even the presumably more stable psychological dispositions can actually change within a person's or a cohort's lifetime. Although the main approaches on values assume certain amount of value stability, they vary in the

degree to which they accept change and in the way they understand it. Inglehart's theory is the one that takes a stronger stance on stability. The other two approaches are more flexible and remain more open to the possibility of change, which they understand as a product of shifts in the life circumstances of individuals and the consequent pressures for adaptation. Inglehart is not so concerned with individual changes in life circumstances, as he tends to be more focused on how macro-changes and big processes shape age-cohorts. I argue here that individual values can also change in response to this type of macro-shifts at the societal level. People have the potential capacity to adjust their dispositions to adapt to new sociopolitical contexts, just as they do to adjust to new life circumstances over the life course. I will argue that Inglehart's approach is biased, and seems to be constructed as an over-reaction to Converse thesis on the instability of belief systems (1964). In doing so, he fails to offer a comprehensive explanation of value change, and his whole theory of values suffers a shortage. Denying the possibility of meaningful individual change over the life course implies failing to understand the true mechanisms that make values function.

Value Change

The study of value change has not received enough attention in the empirical literature. Hitlin and Piliavin (2004) explicitly comment on the scarcity of research shedding light directly on this issue. Roberts and Bengston (1999) from an analysis of the literature, also conclude that it is unclear whether value orientations are fixed dimensions of one's personality in adulthood or remain malleable to aging processes, ongoing socialization in primary relationships, and changing social conditions. Some contributions seem to point to stability, while others to malleability. In this section I present the conceptualizations of value change in the main three traditions of values, and review additional empirical contributions to understand the dynamics of values. According to most theoretical definitions, values are assumed to remain quite stable once they crystallize early in life. However, in the real world, people become older, get married and have children, move to another town or even to another country, find a new job, obtain a degree, experience times of economic turmoil, prosperity or political scandals in their nation. How do these shifts affect the values they hold? Are people adjusting their positions to fit their current personal circumstances or "the times" they are living? Or do they predominantly stick to the values they learnt in the preadult years? What are the mechanisms involved in such processes?

Schwartz believes that adaptation to life circumstances is the key mechanism to explain value change over the life-course. In an article co-authored with Bardi (1997), Schwartz argues that value formation and change are based on an adaptive process that acclimates one's values to social and political circumstances and compensates for deprivations that may arise. They refer to adaptation as a way of adjusting to the opportunities and constraints that structure one's life chances. Adaptation to life circumstances influences value priorities through two mechanisms: acclimation and compensation. Acclimation implies to "upgrade the importance of values that are readily attained and downgrade the importance of those whose pursuit is blocked". People acclimate their value priorities to make them more compatible with their life circumstances. For instance, the authors state that people in jobs allowing high freedom of choice tend to increase the importance they give to self-direction values at the expense of conformity values. For a different type of values, those concerned with material well-being and security that follow the logic of Maslow "hierarchy of needs", a compensation mechanism applies

instead of the mere acclimation. Deprivation increases the strength of these needs and the values they promote. As an example, the authors mention that people suffering economic adversity or social turbulences would attribute more importance to attaining wealth and preserving the social order.

Schwartz and Bardi illustrate their argument reviewing the effects that living under communist regimes had on citizens' values. Communist regimes deeply transformed the living conditions of many personal domains such as work, family, education, or leisure. In response to these altered contexts, citizens needed to adjust their values. Actually, the authors found that East Europeans adapted their value structures to live a reasonable life under those modified circumstances. Citizens in communist regimes acclimated by upgrading the importance of values that were attainable such as hierarchy, and downgrading the importance of those seen as inaccessible or whose pursuit was self-defeating, such as autonomy or egalitarianism. East Europeans also tried to compensate for their deprivation of certainty and security by attributing higher priority to conservatism values. Schwartz and Bardi consider that people can either adapt to political regimes, as in the case they studied, or to the general economic conditions of a country. In this second situation, greater income levels are supposed to bring more security and opportunities to choose lifestyles independently. Security and opportunities for increased independence promote the backing of values such as intellectual and affective autonomy and egalitarianism, and reduce the endorsement of conservatism and hierarchy.

At what pace would adaptation take place? The authors use the transitions to democracy after 1989 across Eastern Europe to reflect on the issue. They tend to think that adaptation processes may be gradual. People will progressively acclimate their values to changed circumstances, upgrading the importance of values that become attainable and downgrading the importance of those whose pursuit is no longer adaptive. In their own words: "[i]f life becomes more secure and controllable, conservatism values will also lose some of their importance, because people will no longer emphasize them in compensation for their insecurity". They seem to support the assumption of the "impressionable years" model[5], though just from a theoretical point of view as they do

[5] That people are more malleable at a particular moment of the life cycle: the formative years of late adolescence and early adulthood; tending to remain increasingly stable after that period.

not provide any empirical backing. They affirm that the rate of personal value change would probably depend on age and life stage. Vulnerability to change may be greatest during adolescence, they argue. At that stage, value priorities would be less crystallized and less anchored in a large number of past experiences to which people have adapted over time. According to them, younger people may therefore adapt more quickly to the transformation of life circumstances. "Adults who discover that goals they have come to cherish (their important value priorities) are no longer adaptive are more likely to resist or to oppose social changes rather than to acclimate their values". However they state such arguments just as intuitions, without evidences that support them. In fact, Mishler and Rose (2007) when analyzing adaptation of adults to democracy after communist rule offer evidence favoring a faster adjustment of older adults than expected.

Rokeach's conceptualization of value formation and dynamics can be found in an article published in 1974, where he performed one of the first attempts to study value change and stability in the United States. Rokeach analyzed cross-section data from his Value Surveys of the American population comparing two points in time: 1968 and 1971. Although some of the values he explored remained rather stable, others underwent significant changes even over such a brief period of time. He attributed the responsibility of those changes mainly to the effects of "the times". Rokeach reflected on how changing political and social contexts shape peoples' values. In doing so, he departed from evidence of laboratory experiments on cognitive and behavioral change. In these experiments, values were made salient to expose people's contradictions. Contradictions fostered the emergence of feelings of self-dissatisfaction, which in turn compelled people to readjust their original values. In his own words:

> "Consistent with a theory of cognitive and behavioral change proposed elsewhere, previous experimental research has demonstrated that long-range changes in values, attitudes and behavior are possible as a result of objective feedback of information about one's own and others' values and attitudes. Such feedback made many of the experimental subjects conscious of certain contradictions existing with their own value-attitude system, resulting in long-term cognitive and behavioral changes. There is also evidence that the basic psychological mechanism that initiates or generates such a process of change is the arousal of an affective state of self-dissatisfaction, the source of which is highly specific and identifiable. Feedback of information led many of the experimental subjects to become aware that they held certain values and attitudes or had engaged in certain behavior that was contradictory to self-conceptions, thus arousing an affective state of self-dissatisfaction. To reduce such self-dissatisfaction, the subjects reorganized their values, attitudes and behavior to make them all more mutually compatible and, even more important, to make them all more compatible with self-conceptions".

Is this kind of experimental situations generalizable outside the lab? Can inertial values learned earlier in life be revised if people realize they no longer respond to the actual setting of daily experiences and sociopolitical contexts? Rokeach stated that there is no reason to think that long-term changes in values, attitudes, or behavior that may take place naturally in one's everyday life would occur by processes any different from those observed in experimental settings. Then he continued to present examples of real life events that might have affected the values of the American population during the particular period of time he was considering (1968-1971). A number of issues became increasingly salient at that time in the US: the involvement in the Vietnam War, institutional racism, and emerging awareness of institutional sexism, or the problem of pollution. As he mentioned: "the more these issues were in the news, the more salient they became for more people, and the greater the receptivity to consider solutions. It is within such an everyday context of issue salience that certain values, attitudes, and behavior […] are especially vulnerable to change, either in American society as a whole or in those segments of American society that perceive themselves to be the most affected by these issues." From this point of view, the combination of issue saliency and the arousal of feelings of self-dissatisfaction may drive a shift in value priorities in real world situations. Rokeach also considers that value change could come from the converse process: when a social problem or issue which was previously salient becomes less relevant as a result of being eased or improved. To illustrate it, he used the case of a hypothetical extension of welfare benefits (legislations, social security or medical care), which would eventually attenuate economic security as a value priority, and pave the way for the emergence of concerns towards higher-order values[6]. On the other hand, not all values are expected to undergo shifts. According to Rokeach, values unrelated to the emergence or mitigation of major societal problems should remain relatively stable: "we may expect that only those values directly related to the particular economic, political, and social issues confronting American society during the relatively brief time interval under consideration will have undergone measurable change." In other words, values would not change if there is no underlying reason for it.

[6] Also in Rokeach's approach, those value types that follow the logic of Maslow's hierarchy of needs experienced a kind of adjustment similar to Schwartz's compensation mechanism for conservatism values, or Inglehart's scarcity hypothesis for postmaterialist values.

Rokeach considered that the value changes he was observing could be attributable both to period or cohort differences, given that the time series were too short to tell and most of the changes were observed among young adults. In a posterior article published together with Ball-Rokeach (1989) they finally point to period effects as the most probable cause. The changes in values he actually reported were happening in real-time as a response or adaptation to contextual influences such as public debates which have an impact on public opinion, or the improvement of the living conditions of segments of the population. Among the first group of influences, those related to public opinion consciousness about issues, he mentioned female increasing awareness of institutional sexism, or male awareness of the need for peace as a response of the current Vietnam War. In his own words: "even within such a short interval, we found that certain values underwent significant change […] These changes seem to be a result of economic factors and the emergence of various issues concerning war and peace, racism, sexism and ecology, all of which become salient and thus a source of dissatisfaction for various subgroups of adult Americans". Among the second group of influences, he cited the effects of the enhancement in the general living standards of white Americans on their values.

Later on, Rokeach and Ball-Rokeach (1989) considered value change over a longer time period. In this case, the study expanded from 1968 to 1981 using the same list of instrumental and terminal values. The authors build their analysis partially as a refutation of Inglehart (1985), who had previously underlined the high stability of values systems –of postmaterialism in particular. In contrast, Rokeach and Ball-Rokeach emphasized the malleability of values. They argued that Inglehart (1985) concentrated on the stability shown in the data, as his main purpose was to challenge Converse thesis (1964) about the randomness of mass public's beliefs (see Ball-Rokeach and Rokeach 1989). They suggested that in doing so, Inglehart ignored the question of whether the data actually showed that certain values were undergoing change. In fact, what Rokeach and Ball-Rokeach observed in their analysis was that US citizens were experiencing shifts during that same period of time, even though the value system as a whole remained highly stable. There were relevant changes in the importance given to equality between 1968 and 1981, as well as in the importance of personal life, sense of accomplishment and excitement. There was also a decrease in the priority given to national security, probably due to the end of the Vietnam War. In their

article, Ball-Rokeach and Rokeach implicitly assume that value change can happen in real-time as something natural.

They propose a justification for these findings, and more generally, an explanation to the natural processes of stability and change in value priorities. The authors try to respond the question of why some values underwent change while others did not. They implemented an experiment to determine the degree to which values were susceptible to change in real-time in response to media information. A TV program was the treatment: it offered information to an experimental group about the results of a survey on the values of the American population. In the program they questioned American's hierarchy of values. In doing so, they indirectly made people think about their own value priorities and induced an emotional experience of self-dissatisfaction to those with similar value priorities to the ones which were being questioned. The results showed that the intervention had indeed an effect: it changed the values of the people (at all ages) who felt discomfort, and it did it in a consistent way over time. They further reported a concomitant shift in associated attitudes and behavior, concluding that "it is not only possible to bring about long-term increases in social values such as equality through experimental interventions, but also long-term changes in related social attitudes and behavior". Conversely, people who had already the values which were primed did not change. The authors confirmed that the underlying mechanism leading to value change or stability was the arousal of feelings of self-dissatisfaction. These feelings may be aroused by providing a person with self-knowledge about inconsistencies that have implications for a person's motivation to think of himself as a competent and moral human being. Value change is initiated in order to reduce or eliminate such feelings of dissatisfaction. Value stability is the consequence of experiencing satisfaction and it implies the reinforcement of the pre-existing belief system.

With the use of an experiment, they were able to modify value priorities in real-time and in a consistent manner: "[i]t is possible through certain kinds of television programs viewed in the privacy of the home to enduringly affect values, related attitudes, and behavior and even to reverse naturally occurring value changes in American society". They further stated that value change and stability in the natural everyday world can also be conceptualized as arising from experiences of dissatisfaction or satisfaction.

Using their own words: “value change may be a result not only of the socialization of youth under conditions of affluence that instigate them to become increasingly dissatisfied with strivings that merely meet their lower order needs, as Inglehart (1981) has suggested, but it is also a result of dissatisfactions arising from consciousness raising, economic insecurity, or perceptions of reverse discrimination in their current context”. In general, Ball-Rokeach and Rokeach’s research is a refutation of Inglehart understanding of value change. Moreover, they provide evidence from experimental research that values can change consistently in response to stimuli such as a TV program.

Using also the Rokeach Value Survey, Grube et al. (1994) some years later performed and experiment to explore how value self-confrontation could modify environmental values, but this time only with a sample of undergraduate students. They found support for the efficacy of value self-confrontation as a means of inducing long-term change in important values, attitudes, and behaviors. However, they considered that the psychological mechanisms underlying change due to self-confrontation require further clarification and study. They argued that the mechanism of change remained unclear. It could be that values self-confrontation increases self-dissatisfaction, leading to value change, but there were other possibilities as well: that value self-confrontation focuses attention on existing self-dissatisfaction; that it increases the salience of specific values; or that it undermines denial of responsibility.

Hitlin and Piliavin (2004) consider that the study of value change can benefit from the contributions of the abundant literature on attitude change to understand the possible mechanisms at stake. Actually, a whole area of studies on how cognitive introspection produces value change is inspired in attitude change research (see Maio and Olson 1998 or Bernard et al. 2003a). These studies exported to values the paradigm for examining cognitive support of attitudes developed by Wilson et al. (1989), who found that analyzing reasons for one’s attitudes toward an object causes attitude change only when attitudes had a strong affective component with few supporting cognitions. This effect depends on the absence of cognitive support because people who have little cognitive support are forced to report random reasons that may be inconsistent with their attitudes, causing their attitudes to change. In contrast, people who possess strong cognitive support can access reasons that are consistent with their attitudes, leading to

no attitude change. This logic can be extended to values. If people lack cognitive support for their values, then analyzing reasons for values should cause people to access some new, accessible thoughts that could be sometimes in favor and sometimes against the pre-existing values, causing a possible value change. Different evidences indicate that that the motivational significance of values derives more from affective support than from cognitive support. And that introspecting about the reasons of one's values may cause value change when they lack a cognitive backing.

In 1998, Maio and Oslon put forward the idea that values often lack argumentative support, and can be considered cultural "truisms": beliefs that are widely shared but rarely questioned. They found that when people are induced to think about the reasons of their own values, the very process of introspection can produce value change. In their article, they presented three different experiments. In the first, they used some items from Schwartz's scale[7] to examine whether reflecting about the motives of one's values caused the values to change. They confirm this introspection effect; a finding that could only be expected if individuals lack cognitive support for their values. In the second experiment they verified that analyzing reasons caused value change only when participants were not provided with cognitive support for their values. The last experiment found that the effect of analyzing reasons could be generalized across individuals holding different value priorities. They also discovered that analyzing reasons for values does not cause value change when people have previously formed strong cognitive support for their values, consistent with the hypothesis that values lack cognitive support.

Later on, Bernard, Maio and Olson (2003a) extended the research on the effects of introspection to a wider range of values. While in 1998 the focus was just on Schwartz's self-transcendence values, they expanded the analysis to values serving different motivations at different social levels. They carried out two experiments to further confirm that analyzing the reasons for values causes them to change. In the first, they replicated the findings for self-transcendence values, while covering three other Schwartz's personal values: conservation, openness to change, and self-enhancement. They basically confirmed that analyzing the reasons of one's own values causes these

[7] The self-transcendence values of forgiveness and helpfulness.

values to change. Participants offered few reasons for each of the values. This fact confirmed the lack of cognitive support. Furthermore, those who analyzed reasons for their values changed them more than did participants in the control group – who analyzed reasons for beverages[8]. In the second experiment, they study the effects of introspection for Inglehart's social value of materialism/postmaterialism, obtaining the same results. As in the first experiment, participants were able to give only a small number of reasons for each materialist and postmaterialist value. And those participants who analyzed reasons for values changed their values more than the control group. They also make an additional finding: participants who analyzed reasons for materialist values changed their postmaterialist values more than participants who analyzed reasons for beverages. This is consistent with Inglehart's argument that materialist values must be satisfied before the pursuit of postmaterialist values, following Maslow's logic. Bernard et al. further argued that if materialist values have a priority, generating reasons for materialist values might also prompt a change of perspective on postmaterialist values, modifying the perceived importance of the latter. Considering the two experiments, they concluded that the malleability of values was proved since the mere introspection was able to affect different kinds of values.

The main thesis of Bernard et al. is that people hold values so consistently and profoundly that are no longer aware of them. For this reason, individuals may not reflect about their own values, and find it difficult to retrieve arguments supporting them. The authors consider that even public discussions of values most of the times fail to reveal how values can be questioned[9]. Values may be sustained not by cognitive support but by strong feelings and past behavioral experiences. This is basically the hypothesis behind "values-as-truisms", which is consistent with Inglehart's conceptualization of values (see Inglehart 1997). Nevertheless, there are alternative theories suggesting that people actively elaborate their own beliefs (see Chaiken et al. 1989, Petty and Cacioppo

[8] Specifically, participants were able to list (on average) only two reasons for each value, despite being able to list almost five reasons for liking or disliking different beverages (e.g., milk). Moreover, participants indicated strong positive feelings about the values and strong relations between feelings about values and ratings of value importance.

[9] They give the example of the impact of the September 11, 2001 events. There was an extensive media discussion with contending positions with respect to the measures needed to maintain national security (a conservation value) across Western nations, but the desirability of national security *per se* was not debated. Its desirability was taken for granted, so that an exchange of reasons for and against this value did not occur.

1986). Some schools of values have operationalized values as conscious goals that can be articulated (Allport et al. 1960, Feather 1975, Rokeach 1973), suggesting that values exist as reasoned entities. Bernard et al. mention Rokeach's idea that people tend to think more in depth about values as they mature in order to prioritize some values over others, and this may lead to develop cognitive support. Conversely, both Schwartz's personal values and Inglehart's social values could be understood more like "values-as-truisms", because they do not question the value in itself, but its priority.

In general, these findings point to a high malleability of values. Values can be consistently modified under experimental conditions. Analyzing reasons for values leads them to change when they lack previous cognitive support. People holding stronger cognitive reasons to support their values report less change when forced to introspect about them. Moreover, under experimental conditions, it has also been found that providing cognitive defenses helps to protect values from attack (see Bernard et al. 2003b). A criticism to this line of experiments is that they are done on young people, and it could be that older people would not be that malleable. However, this argument does not apply to Rokeach and Ball-Rokeach's (1989) experiment, performed on the overall population and also reaching to similar conclusions. In real-world situations, "beyond the lab", I dare to hypothesize that people would hold inertial values; values learned early in life, with low cognitive backing, and rarely questioned overtime. People may find themselves in new unpredicted contexts and experiences which would eventually make some of those values salient. Then those values would become subject to logical scrutiny and if they are found inconsistent with the present context, they might be rejected and substituted by new, more adaptive ones.

Beyond the stream of literature that employs experimental data, there is also a branch devoted to extract patterns from the evolution of values using observational data. A group of studies specifically address the conflation between age, period, and cohort components in the dynamics of values across the life course using hierarchical linear models. Roberts and Bengston (1999) provide compelling evidence of the fluidity in basic values of individualism and materialism over the life span using an especially priceless data frame: an American panel study of families and cohort groups, the National Longitudinal Study of Generations (LSOG) that includes an adaptation of Rokeach's value types. In their analysis Roberts and Bengston take into account the

age-period-cohort components of value dynamics together with other relevant sources of variance in value orientations such as the family unit, using a refined latent growth multilevel framework design. They conclude that basic values do actually change over time as a consequence both of developmental processes linked to age and to the influence of "the times" in the form of period effects. They also find substantive intergenerational transmission of value orientations within the family, although the family did not affect the trajectory of values over time. In this respect, Roberts and Bengston's contribute to the debate by offering empirical evidences in favor of the malleability of values through the life course.

Following a similar approach to the previous one, Copen et al. (2008) study the responsiveness of Rokeach's values to experiences and life course transitions over time. Again they use both the National Longitudinal Study of Generations and the Rokeach values scales. In their models, they also adequately control for age, cohort, and period as well as for family transmission factors, although this time the authors specially focus on the effects of life course transitions on values. By applying random and fixed effects models they were able to find cohort effects, indicating that young adults had more individualistic values than their parents did when they were at the same age. There was also a high degree of parental transmission of values: parents' own values and marital and family behaviors influence the change in their children's values over time. And fundamental to their argument, life course transitions were found to affect values so that the value of collectivism increased at the cost of individualism when people engage in marriage and parenthood. The significant effect of age disappeared when marriage and parenthood were included in the models, indicating that the causal mechanisms at stake were related to life course events and not to age *per se*. They argue that marriage and parenthood imply the acquisition of new social roles that have the power to shift young adult's values from self-oriented ones to those that emphasize involvement with one's own family and community. The author's idea of value dynamics can be summarized with a sentence: "The fluid and responsive nature of values to social contexts is important to remember when studying the life course transitions characterized by young adulthood".

In light of these debates and empirical contributions, now I comment on Inglehart's approach to value change in more detail. In contrast with Rokeach, Inglehart has a more

constrained view about value stability. He embraces with particular emphasis the idea that values are learned at a particular moment of the individual's life stage, the "impressionable years", just to persist quite unchanged thereafter. To him, major changes in values take place mainly through generational replacement, given that value priorities are supposed to be learned early in life and remain rather stable over the life course. As mentioned by Rokeach and Ball-Rokeach (1989), Inglehart's strong stance in favor of the stability of values seems to derive, at least in part, from his will to refute the work of Converse (1964). Inglehart (1985) was disturbed by Converse's findings regarding the apparent low stability of mass attitudes at the individual level. Converse, out of a rudimentary analysis of panel data, concluded that a substantial share of the American public held rather random attitudes about political issues; attitudes that varied from wave to wave for no apparent reason. A part of Inglehart's claims against the naïve approach of Converse were based on methodological grounds, just as Achen's (1975). Analysis of raw panel data will normally lead to overestimate instability in beliefs systems given that measurement error is not considered. Mass attitudes, he said, portray much more coherent and stable patterns when looked through the lens of structural equations or by aggregating them to the level of cohorts, countries or years. He mentioned that with the aggregation, random noise in survey data cancels itself out. In his own words: "There are underlying elements of stability which can be discerned when one applies more refined measurement techniques, and which manifest themselves directly when one examines certain types of survey data at the aggregate level". In this respect, both the analysis of panel data with latent variables and aggregate cohort analysis seemingly portrayed an image of much more stability in beliefs systems overtime.

In his article, Inglehart showed how the apparent volatility of values emerging from the direct study of raw panel data is actually untrustworthy. On the one hand, he aggregated postmaterialist values from repeated cross-sectional data into generational groups and showed that the within-cohort stability levels were high, in a way that could not be explained if random response would have been the general pattern. Commenting on the generational differences found in the data, he said: "Materialist/postmaterialist values show large differences between birth cohorts that not only persisted throughout 1970-1984 but seem to reflect distinctive formative experiences that occurred as much as 50 years ago". These aggregate results, he said, were too skewed to be due to random

answering or method effects. According to him, they reflected underlying attitudinal predispositions in the respondents. On the other hand, Inglehart also tested the stability of postmaterialism at the individual-level using panel data and correcting for measurement error. In his structural equation analysis of the 12 item postmaterialism scale, he showed a much more stable pattern than Converse would have predicted. He further argued that this stability coincided with the high aggregate stability at the cohort level. However, the stability coefficients he interpreted as reflecting rather high persistence in the short period of time of his panel study could also imply a high instability in the mid or long term (see Ehrhardt, Saris, and Veenhoven 2000). All in all, in his purpose of refuting Converse ideas, Inglehart could have committed the opposite mistake: exaggerating stability.

Inglehart wanted to demonstrate that sociopolitical predispositions could be stable and durable, and obey their own dynamics of generational stability over time, in opposition to Converse's thesis. In doing so, he considered instability to arise fundamentally from the presence of non-attitudes or method effects in the data; problems that could be corrected by applying the proper statistical techniques. But what if a share of this instability is in fact a product of genuine adult change in values in response to shifts in contextual conditions like those related to aging, life course shifts or period effects? In his emphasis on value stability, as an overreaction to discard the Black and White model of Converse, Inglehart seems to be closing the door to genuine value change over the life course. In his effort to legitimize the existence and durability of belief systems, he transforms values into stiff, rigid entities. Actually, evidences from different sources that were reviewed in this section, indicate that true value change can happen at different stages of the life cycle. People do not necessarily stop adapting to their life circumstances and reacting to their environment after the "formative years".

In postmaterialist theory, Inglehart seems to include the possibility of a self-actualization of values in response to contextual changes through the scarcity hypothesis. He argued that the processes of value change is characterized by period effects as short-term fluctuations in the socioeconomic environment, superimposed on cohort effects seen as long-term process reflecting the conditions prevailing during a given age-group's formative years. He considers that the scarcity hypothesis operates through period effects, and the socialization hypothesis via generation effects and cohort

replacement. However in his posterior analysis he focuses mainly on generation effects and in underlining within cohort stability overtime. In the few occasions when he considers period effects, he understands them as mere random shocks or fluctuations, seemingly unconnected from generation effects. This partial understanding of the dynamics of values is what I want to confront. I argue that it is based on a preconception, perhaps both the result of Inglehart's will to refute Converse mistaken considerations, and an acritical acceptance of the dominant paradigm of political socialization[10]. I consider that the possibility of adult change needs to be adequately integrated in his individual modernity theory to really account for the malleable nature of values. His theory has additional shortcomings however; it does neither account for age effects or developmental changes through the life course, nor for family transmission processes (see Kroh 2009). He puts special emphasis on excluding the possibility that values and attitudes associated to modernization were influenced by age effects, probably because he sees this type of effects as a menace to his theory of genuine social change. However, life course events and aging are well acknowledged in the literature to have lasting effects on values during adulthood (Roberts and Bengston 1999, Copen et al. 2008). And the problem is similar with respect to period effects. After the formative years, people might still retain the capacity to adjust to changes in the context. A meaningful approach to the dynamics of values needs to be "value-free". As Hitlin and Piliavin (2004) mention, whether values change or remain stable over the life course is mainly an empirical question.

Besides Inglehart's own analysis (1985), additional studies on the stability of postmaterialist values using panel data and the latent variable approach, such as De Graaf et al. (1989), seemed to provide supplementary evidence of intragenerational stability. However, such panel studies, usually take into account a short time period of observations, where genuine intracohort patterns of change are less likely to emerge naturally. Besides that, some of the assumptions of the type of structural equation models applied are rather untenable (Sears and Levy 2003). And the stability coefficients that arise from those models, restricted to two close moments in time, are often generalized to what happens in the mid or long term, which in fact would be incorrect (see Ehrhardt, Saris, and Veenhoven 2000). Much more abundant is the

[10] At the end, Ronald Inglehart being a political scientist could have been more influenced by political socialization models, than Rokeach or Schwartz who came from a more psychological tradition.

literature that uses aggregate cohort analysis to verify the intracohort stability of postmaterialism. Research done by Inglehart himself and colleagues (see for example Abramson and Inglehart 1987 among others) apparently indicated that shifts from materialist to postmaterialist value orientations across many societies is consistently caused by generational replacement, and not by self-actualization of value priorities within cohorts. Flanagan and Lee (2000) also point to generational replacement as the source of change in value orientations. In any case, intracohort shifts in postmaterialist values will only appear, either in panel or in cohort-aggregated cross-sectional data, if there is a reason for them to appear. One of these reasons would be the presence of an underlying trend in an exogenous covariate, which in this case would be the socioeconomic context that people experience during a specific time period. The period of time under scrutiny in many studies of postmaterialist values does not seem appropriate to find relevant intracohort changes and generalize about stability, given their usual short span or focus on an exceptional epoch. However, when a wider time span is considered, the conclusions might be quite different, as I will show in this dissertation. Another reason for observing intracohort changes is the presence of a major discontinuity. Hamberg (1995) studied such a situation by comparing representative samples of Hungarians, Swedes and Hungarian immigrants in Sweden using the European Values Study. She employed the postmaterialist 12-item value battery and found that the values of Hungarian immigrants were similar to those of the Swedes. The assimilation process and exposure to the new culture lead to value change even among adults.

Adult Socialization

The relative shortage of research on the dynamics of values within the specific value literature induces me to turn the attention to the subfield of socialization studies. Values and attitudes are acquired and modified through the process of socialization. Socialization research in the fields of sociology, social psychology and political science has as one of its objects of study the stability and change in values and attitudes. Although initially these studies tended to focus on the importance of early life experiences, there is a growing interest on how the process of socialization continues throughout the whole lifetime. Here I will concentrate on the contributions made by the subfield of political socialization. Within this area, there is a set contending theories about the malleability of values and attitudes over the life course, which is of special interest to this dissertation. It seems that Inglehart found inspiration in one of these approaches, the "impressionable years" model, to help him construct his theory of value change.

Socialization studies have traditionally focused on the importance of early life experiences in shaping individuals' dispositions (see Brim and Kagan 1980, Sigel 1989, Hoge and Hoge 1984, Sapiro 1994, Sears and Levy 2003, Luftey and Mortimer 2006, Jennings 2007). The way in which historical and structural conditions influenced adults was sometimes set aside. It was taken for granted that when individuals reach adulthood, their dispositions tend to remain stable, as if the process of individual development came to an end. Alternative views admitted that socialization continued during adulthood, but devoted little energy to its empirical study or theoretical understanding. As Sapiro (1994) put it: "[s]ocialization during adulthood is more mentioned than discussed". In few occasions changes during adulthood are conceptualized as socialization or relearning, but simply as changing one's mind, or shifting opinions. This is why adult learning processes should deserve further consideration. It is difficult to defend that events that shape individuals' daily experience would not affect their values and attitudes. Among the many situations that may affect adults, Sapiro (1994) mentions "major life events, dramatic or persistent interaction with social institutions outside the family, the experience of historical events and changes, the biological process of aging and the cumulative impact of acting, thinking, and being acted on over time". Hoge and Hoge (1984) argue that socialization

during adulthood is different from child socialization, where it is dominated by major social institutions, like the educational system. Adult socialization, they said, has its own particularities, since it is more voluntary, self-initiated, specialized, and less uniform than childhood socialization. In comparison with a child, an adult is considerably free in his behavior, being able to change jobs, obtain a divorce, move to a new town, or change careers. Adults also have more resources of experiences and intellectual ability to draw on.

Lutfey and Mortimer (2006) review the contributions of sociology and social psychology to understanding socialization throughout adulthood. In these fields, socialization is often defined as the process by which individuals acquire social competence by learning the norms, values, beliefs, attitudes, language characteristics, and roles appropriate to their social groups. Central to this conceptualization of socialization is role theory, which studies the relation between the different positions individuals occupy in society and the development of appropriate behaviors and values to fulfill the required roles. It can be viewed as a theory of understanding adaptation to changing roles. Luftey and Mortimer claim that the socialization process does not end in childhood or adolescence, as the old views on the subject use to take for granted. They understand socialization and learning of values and dispositions as a lifetime process, given that adult people still have to face many new roles and situations which are not foreseeable during early life socialization. They advocate for changing the idea that socialization is something static for a perspective that is sensitive to historical and life course temporality. They specially focus on the life course interpretation of socialization, and how people change when entering in new roles such as in the world of labor or the family. Entering a particular type of job, they say, can shape values of the worker in the direction of praising self-direction, or obedience and conformism. In general, they hold no assumption regarding a cease in learning after early adulthood. Adults need to adjust to new social contexts during the whole life cycle. Socialization is seen as a lifelong process not necessarily bound to specific life stages. From this view, socialization is thought to occur in a variety of contexts (not only the family), which can also vary over time.

In comparison with the sociological perspective, political socialization is sometimes regarded as a findings-oriented area, not very committed to conceptual discussion (see

Sapiro 1994). Sears and Levy (2003) analyze what is known about how political orientations evolve through the life history. The studies in this field have tried to address the issue of the plasticity of political orientations as the individual ages. From a thorough review of the empirical literature, the authors sustain that political socialization has been traditionally focused on the childhood acquisition of a limited set of political orientations. They underline the need to broaden the scope to the full life span and to a wider array of political and social orientations. They consider that there are three general ways of thinking about time and the political life history. The first is focused on the persistence of early experiences, based on assumptions (often untested) from psychoanalytic and learning theories of psychology. The second is concerned with the capacity of adults to change at any time due to the influence of the context. It has a focus on period effects, or what can be called the influence of "the times". The third approach underlines the effects of age, and looks for politically distinctive traits of different life stages. From these general views, Sears and Levy define four models of learning. The first two models consider early experiences to be crucial. Among those, the persistence model is focused on how preadult learning shape individuals dispositions, which are thought to remain stable and reinforce through the life course. A variant of it is the "impressionable years" model, in which attitudes are particularly susceptible to influence in late adolescence and early adulthood but tend to remain stable from there on. These two models are confronted to a conception of adults as more responsive to the events of their "times". This is the lifelong openness model, which states that individuals would be open to influences over the entire life course. A fourth model captures the idea of political life stages: a life cycle model, in which people are attracted to certain attitudes at specific life stages. I consider this fourth model to be subsumed within the lifelong openness one, so I would not comment on it.

The Persistence Model

Some strong statements about the persistence of attitudes seem to derive from the study of party identification, which could in fact be an exceptional case. It is a case of early learning and later persistence that has provided an influential paradigm. A number of longitudinal studies using panel data have been performed to assess the persistence of this attitude. The stability of party identification in the US, with corrections for

measurement error, seems to have been rather high (see Sears and Levy 2003, Converse and Markus 1979, Green and Palmquist 1994, Green and Schickler 1993, Schickler and Green 1997). Sears and Levy wonder whether that is a useful model for thinking about political life histories more generally, and if other types of dispositions behave similarly. In their review of the empirical evidence in the literature they found that racial policy attitudes were also rather stable but less than party identification. Basic political ideology has also been considered quite steady (see Sears and Funk 1999), as well as moral attitudes like those towards abortion or marijuana. Conversely, attitudes in other areas under intense political debated seem to portray less stable patterns (Converse and Markus 1979, Sears 1983).

Sears and Levy wonder why some attitudes persist more than others. They argue that stability could reflect the external outcome of a number of internal collisions between the individual's predispositions and external pressures to change. From this point of view, stability patterns may vary across attitude objects. Sears (1983) argued that both learning and cognitive factors are supposed to enhance attitude stability. Among the learning factors promoting persistence are the volume and one-sidedness of communication in the individual's environment, or the opportunity to practice the attitude in conversation and behavior. Cognitive factors are the constancy of meaning of the attitude object and connectedness of attitudes to other attitudes and values. This theory seems to explain why Americans' party identifications and racial attitudes remain rather stable. These are two cases with high levels of information flow, present in conversation, and with ample opportunities for behavioral practice. Attitudes on policy issues that do not come to public attention that often, and lacking all these contributors of persistence, would portray lower levels of stability. Another possibility is that persistence is greater for attitudes toward objects salient in early life than toward those that only become salient later in life. As an illustration, Sears and Levy mention the effect of adult migration in the US between the racially tolerant North and the conservative South, from a study of Glaser and Gilens (1997).

Another important issue related to persistence refers to the measurement of stability. Earlier I mentioned a classical debate that confronted Converse (1964) with Achen (1975), later joined by Inglehart (1985), about the quantification of the amount of attitude stability in panel data. The persistence of political attitudes seemed to be

questioned by early evidence of instability found in a US panel study presented by Converse (1964). In opposition to Converse conclusions, Achen (1975) argued that a great deal of the individual-level attitude instability observed in panel data may arise from measurement error caused by ambiguous survey items. When measurement error is corrected by the use of structural equations models, the stabilities of political orientations appear to be much higher[11]. Following Achen's ideas, Alwin and Krosnick (1991) performed an influential study of a wide range of political attitudes using panel data and applying structural equation models to correct for measurement error. They concluded that political orientations were highly stable in general, since the stability coefficients of their quasi-simplex models were between .8 and .9. However, Sears and Levy suggest that these high stabilities could be a product of untenable model assumptions (see also Saris and Gallhofer 2007, about the shortcomings of the quasi-simplex model). Moreover, the same coefficients that Alwin and Krosnick interpreted as showing high stability may also indicate instability in the long run. Their stability estimates refer to a short period of time: the individual variation between two observations of a panel survey corresponding to just two consecutive years. Were a .8 stability to persist over time, in the long run it could imply high individual-level instability as well, as calculated by the product of the stability coefficients across repeated waves (see Ehrhardt, Saris, and Veenhoven 2000). More generally, it can be argued that many panel studies from which stability in sociopolitical attitudes is inferred have covered just a relatively brief period of time (in terms of consecutive years), in a context of political continuity, exploring rather stable variables (at least, with no particular reason for change), using statistical techniques that have limitations, and over-generalizing the results. As a consequence, persistence might have been overestimated.

The problems related to measuring persistence also involve the identification of age, period, and cohort effects. As Sears and Levy mention, panel studies are often restricted to the study of a single historical period, and sometimes only to one cohort. This shortfall reduces their capacity to distinguish between the effects of age and those of the period. It is well known that: "Any correlations of age with political attitudes potentially

[11] Zaller and Feldman (1992) sustain that measurement error could also be due to an underlying ambivalence in respondent's positions. Sears and Levy seem to discard this view, given that apparently ambivalent attitudes, such as those toward abortion in the US, tend also to portray high levels of stability.

reflect three different confounded effects: cohort (birth cohort), life cycle (age at measurement), and period (year of measurement)". To grasp the effects of each of these components controlling by the rest is not an easy quest. In the methodological part of this dissertation I will define some of the most relevant strategies to address it. The two main approaches to perform age-period-cohort analysis have traditionally been panel studies and cohort analysis with repeated cross-sections. Cohort analysis use aggregate data and therefore yields less direct evidence about individual-level stability than panel studies do. It requires a series of cross-sectional surveys conducted at different times with different samples but including the same measures. If each birth cohort, as a whole, does not maintain the same distribution of opinion as it ages, high levels of attitudinal persistence at the individual level would be unlikely.

The Impressionable Years Model

The "impressionable years" hypothesis is a variant of the persistence model, stating that adolescents and young adults are specially opened and susceptible of changing than on the remaining stages of the life course. Sapiro (1994) sustains that people in their "impressionable years" are old enough to take in complex political information but too inexperienced to have developed habits of thought or behavior. Sears and Levy consider that at least three psychological propositions lie behind this hypothesis:

> "One is a primacy notion, that young people experience political life as a "fresh encounter", using Mannheim's (1952) terminology, which can seldom be duplicated later. Second, attitudes that are subject to strong information flows and, regularly practiced, should become stronger with age (Converse 1969, 1976), partisanship being a good example of it. Third, the young may be especially open to influence because they are becoming more aware of the social and political world around them just at the life stage when they are seeking a sense of self and identity (Erikson 1968). These three views agree that the period up to one's late twenties, roughly, should be the most volatile".

The implications of this model are the presence of less stable attitudes during early adulthood, the strengthening of attitudes with age, and the constitution of generations. This happens to be the dominant view of the classical studies on political socialization (e.g. Jennings and Niemi 1974, 1981).

The "impressionable years" hypothesis is concerned with the susceptibility of individuals' attitudes to be influenced during late adolescence and early adulthood. The

effects of “the times”, this is, period effects, are supposed to exert a decisive pressure at that stage of life, producing generational effects. People of a similar age share analogous socialization experiences that ultimately shape their political dispositions. These orientations are supposed to remain rather constant as every generation ages, making each cohort different from others with dissimilar socialization experiences. A number of political generations have been identified in empirical research, for example the well-known Nazi generation (see Weil 1987). Sears and Levy quote multiple empirical evidences of the existence of that particularly malleable life stage in the study of partisanship in the US.

The Aging-Stability Hypothesis

One of the implications of the “impressionable years” model is that the values and attitudes people learnt at the time they had their formative experiences should remain stable from then on. This condition is often referred as the aging-stability hypothesis (see Glenn 1980). It is also behind Sears’ idea of “generational persistence” (1981, 1983, 1987). Peoples’ attitudes, shaped by socialization experiences in early adulthood, are supposed to persist relatively resistant to change thereafter. Among the works oriented to test the aging-stability hypothesis, I will comment on Glenn’s (1980) and Alwin and Krosnick’s (1991). In 1980, Glenn analyzed the aging-stability hypothesis and performed an empirical test. He ended up considering that values might be more malleable than expected. He argued that “[w]ith a few exceptions, the statement of the aging-stability thesis in the social scientific literature seem to be based more on common sense notions and the folk wisdom than on scholarly theory or on systematic examination than of relevant evidence”.

Glenn reflects on the causal mechanism behind the aging-stability hypothesis. One possibility is that the progressive stability of life circumstances would drive to value stability. This explanation does not propose a decline in the inherent changeability of the individual, but only a reduction in exposure to influences for change. As he said, other factors might be responsible for the decline of the capacity to change with aging. Biological aging may bring a tendency towards a sort of psychological rigidity in attitudes and behavior (see Carlsson and Karlsson 1970). However, recent evidences in

neurobiology seem to contradict this idea and point to openness throughout the life course. Blakemore and Firth (2005) describe how the brain learns at all ages. Many evidences indicate that neural plasticity is a baseline state, independent of age. In other words, the brain can learn new information, and adapt, at any age (see Scholz et al. 2009 among others). Another hypothetical causal mechanism of aging-stability could be a sort of an adjustment processes (see Ryder 1965). According to this point of view, once the person arrives at a collection of attitudes and beliefs that gives a sense of understanding and capability to deal with reality, he tends to resist influences that would contradict it and perhaps lead to feelings of dissonance.

Glenn (1980) also comments on the existence of 'attitude inertia', by which attitudes, once established, tend to perpetuate themselves. Established attitudes would have an incumbency advantage over competing attitudes, analogous to the advantage of incumbent political officeholders over their challengers. In addition, he argues that long-held, publicly exposed attitudes are thought to be more fixed than recently acquired and privately held ones. A related view is that existing attitudes are products of accumulated experience and their resistance to change varies directly with the amount of experience that has produced and reinforced them. Using a deliberately simplified model, Glenn (1974) states:

> "To illustrate how this change [increase in attitudinal stability] may occur, let us assume an oversimplified model of attitudinal development whereby one's attitude on a controversial issue is determined by the mean of all of the pro and con stimuli to which the person has been exposed. The second or third stimuli may change the mean considerably, but the twentieth or fiftieth can have relatively little effect. In fact, attitudes do not develop in such a simple fashion. Yet, there may be a tendency for the effects of stimuli to diminish with the number of preceding relevant stimuli. If the number and intensity of stimuli and experiences do not vary appreciably from one year to another, the effect of a year of living on one's attitudes may be roughly a function of the proportion of the time the person has lived which that year constitutes. If so, a subsequent year will tend to have somewhat less effect than the year before."

One of the shortcomings of this model is that it understands the individual as a more or less passive receptacle of influences. In the real world, however, people may have needs and dispositions that turn them more opened to some influences and less so to others. The author sustains that eventual refinements of the core model do not distort the main prediction of "increased attitude stability with aging, assuming that the person's needs and dispositions remain fairly stable". Glenn reviewed previous evidences in favor of the age-stability hypothesis. He argued that although published evidences seem to

support the aging-stability thesis, they deal with a very restricted array of attitudes. Moreover, not all the relevant published data seem to support the aging-stability thesis. In this vein, he mentions Glenn and Hefner (1972) who showed that the influences which produced change in the party identification of younger cohorts also induced a similar change in the older ones about four years later. It was a delayed response, but response after all, to influences for change in the older cohorts.

Glenn (1980) also talks about the potential differences in stability between values, attitudes and beliefs. Following a gradient, values should be relatively stable, while beliefs and attitudes should be more changeable. But he argues even within each of these categories there may appear dissimilarities. Some values would be more stable than others, as well as some beliefs and attitudes. When talking about this hierarchy of stability, he considers that the least malleable should be values emphasized during childhood socialization: the so-called deeply ingrained values concerning religion, the family, marriage, and abstractions such as love, freedom, or democracy. At the other side of the continuum, the most malleable were supposed to be beliefs about the nature of changeable and concrete objects. Attitudes with relatively changeable and tangible objects are likely to be quite variable (e.g. approval of government performance would depend on its performance). According to him, this type of attitude would not be appropriate to test the aging-stability thesis. For that purpose, he considers we must look for "basic values" and attitudes related with stable or abstract objects. In his own words: "These attitudes should tend to stabilize beyond adulthood if the aging stability thesis is correct". In this dissertation I try to focus on this very sort of basic or abstract sociopsychological dispositions.

In the empirical part of his work, Glenn (1980) investigates two hypotheses: that aging reduces values' and attitudes' susceptibility to change in response to period influences, and that some components of the aging process lead to changes in values and attitudes. The first hypothesis is examined using a series of cohort analyses of US national survey data. In general, cohort data showed greater change in the younger adult cohorts than in the older ones during periods of rapid social change, but they nevertheless show substantial change among older cohorts too[12]. Greater changeability among the young

[12] Exceptions to this general pattern occur for party identification and attitudes toward a hypothetical black candidate for president.

seemed not to be explained by ceiling or floor effects, or by educational differences among the cohorts. However, many attitudes of older adults, including some that reflect "basic values", do not become highly resistant to change. When analyzing data on racial and ethnic prejudice, Glenn found that the pattern of age-stability was not completely supported if corrections for ceiling effects were introduced: "[s]tandardizing for correcting for ceiling effects provides only limited support for the age-stability thesis." In his own words: "[t]he age-stability thesis is not categorically correct, that change-proneness in regard to all kinds of attitudes reflecting basic values does not always decline as cohorts age through the adult stages of the life span". In fact, he argued that older adults can and do change their responses to questions designed to measure racial and ethnic prejudice. In view of those findings, he concluded that the aging-stability thesis in the field of values, attitudes and beliefs research is only at its infancy, and any conclusion must be tentative. The second hypothesis referred to possible age effects on values, attitudes and affective states such as party identification, interest in politics, vocationally related interests, job satisfaction, and happiness. The evidence from cross-sectional, cohort, and panel studies was not conclusive but suggested that several kinds of age effects were able to induce changes in these dispositions.

More than a decade later, Alwin and Krosnick (1991) re-examine the aging-stability hypothesis using a wide array of sociopolitical attitudes. First, they tried to validate the impressionable-years hypothesis, by which the youngest adults are supposed to have less stable attitudes. Second, they test the aging-stability hypothesis that attitude stability increases with age. And third, they explore if the type of attitude makes any difference with respect to stability, studying whether symbolic attitudes are more likely to portray stability over time than less symbolic ones. They put forward that attitude stability will be lowest during the impressionable years, growing in magnitude over the life cycle, with a possible decrease in attitude stability during the later years. To get estimates of intracohort stabilities, they apply structural-equation models using a three-wave panel survey (NES). They explore 50 different measures of attitudes and found that all attitudes portray high stability levels across age-groups (.8 and .9 stability coefficients) irrespective of age. Although youngest adults had lower levels of attitude stability, the difference with the rest of age-groups was not statistically significant. They obtained weak support for the strengthening of attitudes with age hypothesis, since there were no relevant age-related differences in stability, except for the case of party

identification. Apparently, sociopolitical orientations were in general highly stable over the life span, independent of age. Additionally, there was no marked decreased in attitude stability in the oldest age groups as suggested by Sears (1981). They found no difference between symbolic and non-symbolic attitudes in the relationship of age to stability, contradicting Sears' theory. The strengthening of attitudes with age was found to apply only to the case of party identification. When they examine intracohort patterns of stability in party identification, they found support for the impressionable-years and the aging-stability hypotheses.

When using individual-level panel data, attitude change can be confounded with unreliability of measurement. To disentangle the extent of the true instability of attitudes from the possible unreliability of measurement, Alwin and Krosnick applied a type of structural-equations model which assumes that attitudes change following a simplex process (see Alwin 1988), a usual methodology at that time[13]. Their models take for granted that there is no correlated measurement error across interviews. Violation of this assumption would lead to inappropriately low estimates of unreliability. Some may consider such assumptions as untenable (Sears and Levy 2003). Alwin and Krosnick admit that their structural-equations models cannot properly test for period effects. Furthermore, they interpret their stability estimates, circumscribed to short periods of time, as a sign of the high constancy of attitudes. As mentioned earlier, those indications of stability in the short-term, can also imply high variability in the mid or long-term (see Ehrhardt, Saris, and Veenhoven 2000). In addition, the time span they study, a total of six consecutive years for the majority of attitudes, may be too short to elicit eventual trends. Moreover, the kind of political attitudes they analyze do not necessarily have any particular reason for change during that limited period of time. The authors do not offer any theory of change, apart from the aging-stability hypothesis. It could well be that the set of attitudes they explore are actually attached to rather stable political objects, that provide no reason for a shift. I argue that there must be changes in the exogenous or endogenous factors in order to motivate a corresponding shift in the value or attitude. Otherwise, these sociopsychological constructs could remain rather stable. The actual capacity for change may be therefore understated.

[13] More refined models are applied today, such as the autoregressive cross-lagged model, the latent growth curve model, the autoregressive latent trajectory, or their continuous-time versions (van Montfort, Oud, and Satorra 2006).

Lifelong Openness

The lifelong openness approach emerges as a reaction to the persistence and impressionable years models. It questions the assumptions behind those models. As Sears and Levy (2003) mention, it confronts the "primacy principle", that early-acquired dispositions tend to persist over time, and the "structuring principle", that orientations acquired during childhood structure later learning of values and attitudes. The will to take into account change through the life course comes from both developmental and rational choice perspectives. Two of the most comprehensive contributions in favor of the developmental approach are put forth by Brim and Kagan (1980) and Sigel (1989). Brim and Kagan (1980) question the traditional idea that early life experiences necessarily constrain adult development, and understand socialization as an ongoing, lifelong process. They argue that "the consequences of the events of early childhood are continually transformed by later experiences, making the course of human development more open than many have believed". They offer evidences in different fields that growth changes across the life span actually influence people's stances, given that many individuals still retain a great capacity for change. In their collective research they mainly focus on the effects of life course events, and the differences that appear between individuals sharing a similar historical period due to their dissimilar life trajectories. They recognize the impact of the well-known life course events such as marriage, divorce, having the first child, or retirement have on behavior. However, they also underline the effect of other more subtle experiences often unlabelled such as succeeding in the work career, the stress of adolescence, or unanticipated accidents. Instead of concentrating on a specific age periods, they favor a perspective that takes into account the complete life course, as well as the possibility that different cohorts age in different ways.

Sigel (1989) also considers that learning and development are not completed by adulthood, and calls for a developmental, life-span approach to the field political socialization. According to her, the foundations of an individual's worldview start during childhood and adolescence, however experiences during adulthood play a crucial part in the developmental process. This happens because adults are exposed to numerous unanticipated political experiences. Many of these new experiences require a

balance between values learned early in life and the need to adopt new ones which may conflict with the former. Additionally, adults have to assume a number of unanticipated roles, and these roles can drive them into different directions. It is unlikely that childhood socialization would provide sufficient preparation, and then additional learning would be required. In her book *Political Learning in Adulthood*, Sigel collects a series of studies that examine the effects of different types of discontinuities within adult life that challenge the pre-existing dispositions and force people to learn and adapt to new circumstances (e.g. entering the labor force, the military, social movements, or dealing with traumatic events, among others). Although some of the contributions point to continuity, others indicate considerable change in sociopolitical attitudes and behaviors as individuals face new situations.

Some adult changes were attributable to factors intrinsic to the individual, such as those related to the processes of aging: psychological, cognitive and emotional transformations experienced as the person matures. Other changes can be attributed to external social phenomena that people learn to cope with, such as major technological changes, or transition from rural to urban life. Among the different types of historic events that may affect people, she mentions a series of dichotomies. There can be progressive macrosocial transformations as well as abrupt discontinuities like wars; situations in which individuals have no control of the process and ones in which they have, such as migration. People can be in an environment in which modernization flows faster or slower (urban-rural, upper-lower class, education); individuals can have some preparation for change or no preparation. New cohorts could be better equipped for change, as they have been accustomed to it during their younger years. Younger generations can influence older ones. The whole society can be persuaded by the media, politicians, or social movements. Re-socialization also varies according to the magnitude and severity of the events.

Sigel claims for a rigorous study of the conditions under which attitudes persist or change. She speaks in favor of developing "a scheme to distinguish conditions likely to lead to dispositional and behavioral change from those likely to encourage stability and/or overt resistance to change". To her, it would require distinguishing the demands made upon the individual during adult years according to three criteria: 1) their congruence or incongruence with socialization patterns internalized during youth, 2) the

consonance or dissonance of simultaneous demands, and 3) the degrees of freedom available to the individual to meet or reject demands. These set of characteristics affects the likelihood of individual change during adulthood. In this vein, Sigel reflects on, what she calls, the false dichotomy of continuity versus change. Under certain conditions people would change their feelings and behavior, whereas other situations would require the consolidation of the existing ones. Sigel also complains about the lack of data to uncover political development over the entire life-span.

Sears and Levy mention that the type of discontinuities considered in Sigel's book often occur in late adolescence and early adulthood, suggesting that those findings may also be compatible with the "impressionable years" hypothesis. In fact, not many people are exposed to major discontinuities after early adulthood, as life tends to become increasingly stable. The actual capacity of adults to change in face of eventual discontinuities may be eclipsed by the mounting stability of life circumstances which is characteristic trait of the adult period[14]. Besides the natural fact that adults tend to live in increasingly steady conditions, the current empirical literature has an additional shortcoming: many socialization studies focus on the US case, which is a particularly stable political context. All these circumstances taken together might have driven researchers to overestimate the actual stability of political attitudes. Sears and Levy refer as an example to the cases of party identification and racial attitudes which are normally stable in the US. However, when observing particular moments of upheaval, such as the intraparty quarrels of the early 1970s, all cohorts became affected showing lower partisanship levels as they aged, contrary to its usual course. In this same vein, the authors also refer to Converse (1969) who found that age was associated with stronger party identifications in the mature democratic systems of the US and UK, but considerably less so in the interrupted democratic systems of Germany and Italy, and in the immature electoral system of Mexico.

Besides the developmental approaches, rational choice theories in political science have also favored the lifelong openness approach. From this perspective individuals are more or less ahistorical actors able to appraise the available information at any moment in time during adulthood and make decisions accordingly. Sears and Levy mention one

[14] See Sears and Levy (2003) for a review of the literature on the increasing stability of life circumstances and social networks in adult age.

influential line of work in political socialization that understands adult party identification as influenced by the political context and events of the moment. It analyses how adults' partisanship is in fact responsive to "the times", such as economic conditions and judgments of incumbent performance (Fiorina 1981), and candidate images, issues, or events (Allsop and Weisberg 1988, Markus 1983, Niemi and Jennings 1991). In one study by Rapoport (1997) candidate evaluations were shown to influence adult party identification, rather than vice versa.

Inconclusive Conclusions

Sears and Levy conclude their revision of the literature arguing that the overall claims of persistence were supported. More recently, M. Kent Jennings (2007) from another review of the main contributions to the field of political socialization reached to rather similar conclusions, finding generalized support for the "impressionable years" model. However, both conclusions might be flawed as they are based on a rather biased set of evidences. In most occasions they are supported on empirical studies of stable attitudes in rather stable contexts, observed over relatively short periods of time. The fact is that the available evidence about individual development is based on the American political context. As Sears and Levy acknowledge, it is only a single case, with a highly stable political system, even compared to other developed democracies. Generalizing from such a case may lead to an overestimation of persistence within the individual life history. In this respect, studying the effects of developmental changes or contextual discontinuities or trends is an invaluable tool for assessing the validity of any of those models of socialization. When there are no reasons for attitudes to change, they would not change. However, should there be any particular reason for change, for instance, an ongoing macro-social transformation (e.g. a political transition or the process of modernization) or a developmental change during the personal life course, then, it would be more likely to identify adult learning processes. Therefore, there is a need to focus on the study of these processes to really grasp the capacity for individual adaptation and change. This is why in this dissertation I study items involved in an explicit process of change as part of the transformation brought by modernization, and therefore having a clear reason for change.

Jennings cites different research evidence from panel studies in tune with the stability perspective. However, he also mentions contributions from the study of repeated cross-sections purporting the opposite: the capacity of adults to systematically change their positions over the lifespan. In particular, he cites the studies of Mishler and Rose (2007) about the changes in Russians' political attitudes after the transition. This study points to the presence of a strong adult learning process, in the form of period effects, though accompanied by the classical generational effects. In this dissertation, I build on Mishler and Rose's lifetime learning perspective and extend it to the study of values and abstract or symbolic attitudes involved in the modernization process. Another important issue that Jennings underlined is that socialization studies have been changing from an emphasis on individuals and their attributes as units of analysis, to incorporating the effects of the context into the socialization process. He argues that context can be understood as the country context, the historical period, or the meso-level of institutions, organizations and networks. While sociological and sociopsychological approaches to socialization seem to be more dominated by the effects of individual life history changes, and their effects on values and attitudes, the political socialization approach is more concerned with the effects of the context, be it the historical times in general or the particular political situation. In this dissertation I focus on the effects of the context, particularly, the effects of time, country, and belonging to a particular birth cohort.

Political Culture and Models of Learning

The study of transitions to democracy and their consequences on attitudes has reopened a debate about the capacity of adult learning or relearning in political science. The discussion goes round the strength and durability of generational effects in political socialization, the adaptability of adults to political transformations, and the time needed for a relevant change to happen (Mishler and Rose 2007). This debate confronts two different perspectives about the stability of belief systems in political science, related to the models of socialization presented in the previous section. One comes from the political culture tradition, the cultural theory; and the other from the rational choice school, the institutional theory. The discussion can be traced back many decades, and it is central to contemporary political science (see Eckstein 1988, Whitefield and Evans 1999, Mishler and Rose 2001, 2002 y 2007 for a review). The followers of the political culture approach favoured the "impressionable years" model of learning. They underlined the relative stability of national cultures and the idea of change produced mainly by cohort replacement. Conversely, the rational choice supporters relied on the capacity of individuals to evaluate the ongoing institutional performance relatively free from the bias of past experiences, and therefore they emphasized people's capacity for change.

The emergence of the political culture approach in the field of political science dates back to 1960 (Eckstein 1988), with the seminal works of Almond and Coleman (1960), and Almond and Verba (1963 and 1979) followed by a plethora of studies. Following Whitefield and Evans (1999), the basic idea beneath the subjective political culture approach – its hegemonic branch[15] – is that people's preferences, values and beliefs derive from normative orientations learned early in life, which are stable over time. Differences between nations with respect to values and attitudes are then explained in terms of long-standing societal norms transmitted through socialization, especially during individual's formative years (Whitefield and Evans 1999). In this vein, the cultural theory of learning, which derives from this political culture tradition, basically follows the "impressionable years" model. As Mishler and Rose indicate (2007), this approach emphasizes the strength of socialization at an early age. Fundamental political

[15] There is still a lack of agreement with respect to the very concept of political culture, and it is not the aim of this research to reflect on it.

attitudes are supposed to be deeply crystallized and change only slowly over wide periods of time. Generational differences are considered to be of crucial importance because each cohort is socialized under different social and economic conditions and comes to age at diverse historical epochs.

The other side in confrontation is the institutional theory, inspired by the rational choice school. In this theory, situational characteristics are supposed to be the factors that shape individual attitudes and behaviour (Whitefield and Evans 1999). These situational elements are social dispositions of the agent, political opportunities and recent experiences. In Whitefield and Evans' words: "individuals construct and reconstruct their political responses and behaviour on the basis of the combination of available information, resources and constraints". To this approach, the source of differences among nations is to be found in their diverse contemporary state context, individual endowments and opportunities for political voice. It does not expect them to be created by long-standing cultural dissimilarities, understood as shared political values crystallized through early life socialization. This is because individuals are thought to react to the intermediate context and the recent political, economic and social experiences. Quoting Whitefield and Evans (1999): "by comparison with the political culture approach, the rational choice explanation is rather direct and immediate in terms of the causal chain of processes required to produce a given attitudinal response; individuals assess a given political issue in terms of their recent experience and calculated future opportunities". This perspective is supposed to emphasize adult political experiences and adult "relearning" as a consequence of the current evaluation of the context (Mishler and Rose 2007). In this vein, institutional theories consider that attitudes and behaviours are to a great extent adaptable. Adult life experiences play then a larger role in adult opinion-formation. Generational differences, if they should exist, would diminish with the passage of time, overwhelmed by the bulk of contemporary shared experiences.

In fact, cultural and institutional theories could also be seen as complementary; two compatible components of a same lifetime learning model. More recently, even Almond himself argued against the conflict between the two theories (1993). When confronted to many evidences pointing to the adaptability of cultures, he finally claimed for an approach to political culture able to take into account institutional factors and recent

experiences (Whitefield and Evans 1999). He admitted that adult experience with governmental, social and economic performance should be included in the definition of political culture. From a more general point of view, Delli Carpini (1989) also claims that there is no theoretical reason to assume that one ever stops the iterative process of learning and reevaluating. “Once the rapid psychological, moral, cognitive, and educational developments associated with childhood and adolescence have occurred, there are no solid biological or experiential arguments to suggest that there is less change and development in one’s forties, than in one’s thirties, or in one sixties than in one’s fifties” (apart from the physical and mental decay of old age) (Delli Carpini 1989). According to Mishler and Rose (2007), in a lifetime learning model, political lessons of childhood are reinforced, revised and replaced over time by later life experiences. I use the lifetime learning approach as a framework to analyse a particular case in this research: the evolution of values and abstract or symbolic attitudes linked to the modernization process.

How do cultural, institutional and lifetime learning theories envision change in values and attitudes? The usual way of understanding change from a culturalist approach is as a slow and progressive process. Central to cultural theories of political learning is the concept of generation as the basic unit of socialization. Cohort effects can have the form of discrete historical differences or monotonic macrosocial transformations. This second type of generational differences is linked to broad social processes of progressive change such as modernization. Every new generation lives in a slightly different world as a consequence of this ongoing macrosocial transformation. The effects of these processes tend to be unidirectional. Generational differences are then continuous and monotonic; one good example of them is Inglehart’s theory of modernization. Cultural theories forecast that initial differences between cohorts will remain unchanged as generations grow older. Early life socialization is considered to be more important than later life experiences in the formation of adult attitudes and behaviour, following the idea of the “primacy principle” developed by Searing, Wright and Rabinowitz (1976). In the same vein, the “structuring principle” (Searing, Schwartz and Lind 1973) postulates that attitudes learned early in life interpret and shape later life learning in a path-dependent process that reinforces early life socialization.

Institutional theories understand change in values and attitudes much more as a "real-time" process, as they do not give such a crucial role to the "impressionable years" and cohort effects. They consider that major institutional changes and events have similar contemporaneous effects on different generations (Mishler and Rose 2007). Therefore, should there be some sort of initial generational differences, they would tend to disappear as a consequence of the homogenising effect of contemporaneous experiences. Institutional theories underline the effect of the current historical period and life-cycle experiences. Individual characteristics, especially economic interests, are more likely than generational membership to condition individual responses to contemporary experiences. There should be a quick individual reaction in response to external conditions.

Lifetime learning models admit the importance of generation effects, but also recognize the possibility of intracohort change. Each generation remains influenced by the experiences of the "impressionable years", but adult socialization linked to life cycle processes or the historical period exerts a substantial impact on current political orientations. Adults are exposed to different unanticipated political and economic experiences during their life. Some of these experiences require an equilibrium between values learnt in the past, and others demand the adoption and acceptance of new ones (Sigel 1989). Moreover, adults have to confront a number of roles which are different to those from their youth, and these new roles can lead to different directions. Early life socialization may have not provided an adequate preparation to anticipate new situations without an additional learning (Sigel 1989). From a lifetime learning perspective, we could observe constant generational differences in attitudes as well as intracohort change due to period or age effects. I am going to use the lifetime learning approach to study the socio-political dispositions associated to the processes of modernization. I use Inglehart's theory as it makes a special emphasis on the importance of socialization at an early age. Values and attitudes attached to modernization are supposed to be deeply crystallized and change only slowly over wide periods of time by means of cohort replacement.

The Individual Modernity Syndrome

Inglehart's value frame is embedded into his more general theory of modernization. In this section I summarize the main ideas behind this broader theory. It basically establishes a wider set of items, beyond postmaterialist values, in which to test the lifetime model of learning. The concept of modernization has its roots on classical social theory, back to Marx, Weber, and Durkheim. Modernization theory is oriented to understand the processes by which traditional societies become modern, and the set of factors involved in this transition. Most of the contributions to this theory were devoted to analyze macro-level phenomena linked to socioeconomic development, such as industrialization, burocratisation, urbanization or secularization. Alex Inkeles (1969, 1974) was among the first social scientists to address the micro-level aspects of modernization: the psychological changes experienced by the population as societies modernize; given birth to the concept of individual modernity[16]. Individual modernity deals with the psychological characteristics that are supposed to become dominant as societies experience the socioeconomic transformations of modernization (Welzel 2007). Inkeles (1974) developed a scale to measure modern psychological orientations and identified the traits of a modern personality[17]. He defined a general syndrome by which the population turn more open-minded and secular, positivist, rational, politically aware, and achievement oriented as societies underwent modernization. Ronald Inglehart finds inspiration in Inkeles and offers a new version of the individual modernity syndrome, which he himself has been refining over time. Materialist/postmaterialist values are just a component of this more general syndrome.

Inglehart is especially concerned with how socioeconomic development changes the values and beliefs of the population, which in turn puts forth democratizing pressures and participatory demands into the political system. In such a way, he quite directly

[16] Besides Inkeles, McClelland (1961) also explored the psychological aspects of modernization.

[17] Inkeles recognized a set of attitudes and orientations that compose individual modernity: 1) open-mindedness, an open attitude to new experience; 2) secularism, allegiance to secular authority; 3) positivism, a positivist belief in scientific progress; 4) meritocratism, a strong achievement orientation: 5) rationalism, a rational attitude towards careful planning; 6) activism, a participant attitude to politics and community affairs; 7) nationalism, a super-local identification with the nation.

connects modernization theory with the political culture tradition[18]. The idea was not new, since Lipset (1959) already argued that economic development unleashes a set of social changes which tend to facilitate democracy. Lasswell (1951), from a more sociopsychological point of view, also described a set of modern attitudinal orientations which overlap with the prototypical democratic personality. Like Inkeles, Inglehart considers people's psychological dispositions to be shaped by socioeconomic forces. These forces transform the basic living conditions of the population, and given that value orientations are supposed to reflect living conditions, values end up changing as well. One of Inglehart's main aims has been to explain political changes. He can be considered to belong to the political culture tradition.

Inglehart provides the causal mechanisms by which socioeconomic forces change people's psychological orientations (Welzel 2007). Departing from Maslow's pyramid of human needs, he argues that lower-ordered needs must be fulfilled before higher-ordered ones emerge. Material welfare provided by economic development satisfies primordial needs, so that people can focus on superior and less material necessities. This causal mechanism affects postmaterialist values, as well as a whole set of associated dispositions. Inglehart also suggested that the whole process of change that characterizes the individual modernity syndrome takes place gradually, following the pace of generational replacement. He endorses the "impressionable years" model of learning, by which people become strongly influenced by the experiences of their formative years, and tend to remain stable thereafter. Inglehart's theses are supported by two main sources of evidence. On the one hand, he used the Eurobarometer Surveys, containing many observations over time, where he spotted a general increase in postmaterialist values across Western Europe. And, on the other hand, he employed the World Values Surveys with data including many indicators from a wide array of countries. In this case, Inglehart used multiple indicators to identify a wider set of modern and postmodern values, computing factor scores for each country to perform comparative analysis. His factor analysis disclosed two main value dimensions that compose his individual modernity syndrome. Here, I will present Inglehart's approach

[18] Almond and Verba (1963) were concerned with the psychological foundations of the democratic order, what they called "the civic culture". The types of attitudes they studied could overlap to a certain extent with the "modern culture".

through his major publications, following the idea that postmaterialist values are just a component of his more general theory of change.

In his earlier book, *The Silent Revolution* (1977), Inglehart presented the basic elements of his theory that he further developed and refined in posterior publications. He identified major intergenerational shifts in materialist/postmaterialist values in a group of advanced industrial democracies, and showed how these changes were affecting the political sphere. In his next volume, *Culture Shift in Advanced Industrial Society* (1991), he framed that value shift within a much broader process of cultural change which was gradually transforming political, economic, and social life in these societies, a particular type of individual modernity syndrome. This syndrome involved changes in religious beliefs, in motives for work, in new issues that give rise to political conflict, in the importance people attach to having children and families, and in attitudes toward divorce, abortion, and homosexuality among others.

Modernization and Postmodernization

In 1997, Inglehart published *Modernization and Postmodernization*, one of his more influential works. He insisted that the shift from materialist to postmaterialist values was just one of the components of a more general cultural shift. About forty other variables in the WVS seemed to be experiencing similar changes. These variables referred to a wide variety of orientations, from religious opinions to gender roles, or attitudes towards gays and lesbians. All of them portrayed generational differences and were tightly linked to postmaterialist values. Inglehart claimed that economic development, cultural change, and political shift take place together following coherent patterns, which can be predicted. Once a society is embarked in the process of industrialization and economic development, it is highly probable that a set of related changes would take place, going from mass mobilization to a reduction in gender differences.

From the analysis of cross-national survey evidence he spotted two distinctive patterns of change. One of those patterns was named modernization, and defined the transition from traditional to modern society, and the other was called postmodernization,

reflecting the passage from a modern to a postmodern nation. Previous literature on modernization tended to focus just on the first stage. He argued that industrially advanced societies are not in a process of modernization, but in one of postmodernization. Modernization is supposed to enhance the economic capacities of a society by means of industrialization, and its political capacities through burocratisation. The distinctive sign of modernization is that it allows societies to go from poverty to wealth. The central process of modernization is industrialization. Economic development becomes the main societal objective and motivation for attainment the key individual goal (see table 1.1). Transition from preindustrial to industrial society is characterized by a profound rationalization of all spheres of society, which fosters a shift from traditional to rational-legal values in the social, politic, and economic domains. However, the deepening of economic development in industrially advanced societies engenders another change in basic values, and instrumental rationality looses importance. Postmodern values become predominant producing a variety of social changes, increasing individual autonomy and a loss of importance of religious and legal authorities.

Table 1.1 Societal types of society and social goals and individual values.

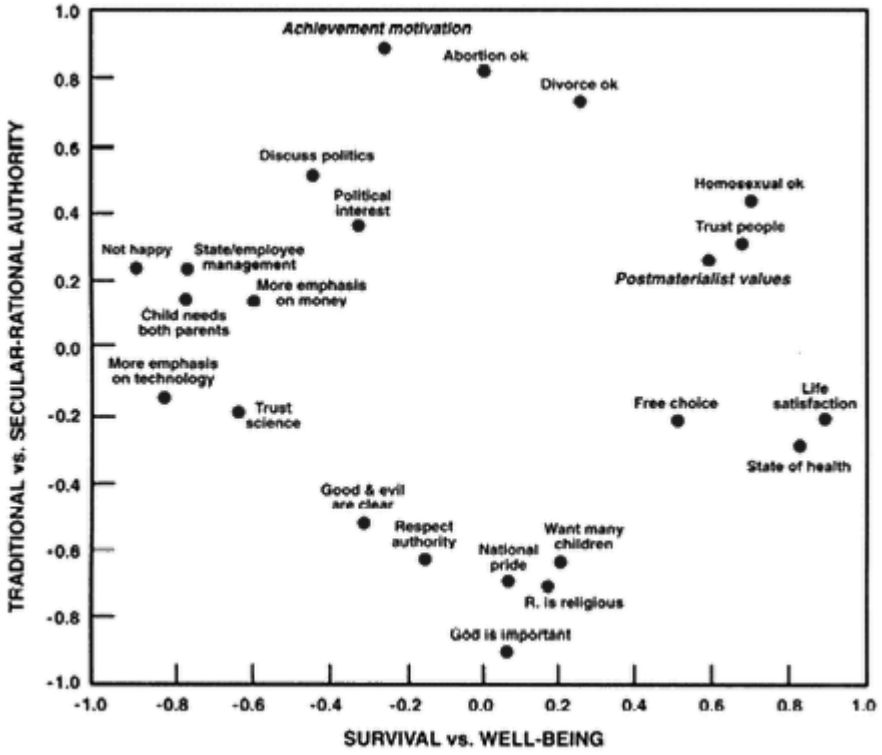
	Traditional	**Modern**	**Postmodern**
Central societal model	Survival in a stationary economy	Maximize economic growth	Maximize subjective well-being
Individual values	Religious and communitarian traditional norms	Motivation for attainment	Postmaterialist and postmodern values
System of authority	Traditional authority	Rational-legal authority	Loss of importance both of religious and legal authorities

Source: Inglehart 1997.

Modernization implies a cycle of industrialization, occupational specialization, burocratisation, centralization, increasing levels of education, and beliefs and values that support the high rates of economic growth. However, in already industrially advanced societies a second syndrome of cultural and institutional changes emerges. In this second stage, Inglehart argues that economic growth becomes a secondary priority, while quality of life and democratic advancement turn in to key issues. He does not

believe that those changes are deterministic. The cultural heritage of a given society, he argues, can promote or hinder modernization, as well as particular actors within that society such as political leaders or churches. Inglehart based his analysis on cross-sectional evidence of many different countries at similar points in time, which can be questionable because it implies assuming that all countries would follow a similar trajectory. Figure 1.1 presents some of the indicators of this two-fold cultural syndrome. The figure shows two value dimensions extracted from a factor analysis of multiple indicators: a traditional / rational-secular one, linked to modernization; and a survival / well-being, attached to postmodernization.

Figure 1.2 Inglehart's Axis of Values



Source: Inglehart 1997.

Modernization, Cultural Change, and Democracy

In his most recent book (2005), Inglehart together with Welzel presents a renewed version of individual modernity theory based on the notion of human development, which accounts for recent criticism to his previous approach. The authors argue that

modernization is in fact a process of human development, in which economic growth activates cultural changes that make individual autonomy, gender equality, and democracy increasingly likely. Industrialization brings rationalization, secularization and burocratisation, but the birth of the knowledge society produces a set of changes that go into a new direction emphasizing individual autonomy, self-expression, and free choice. The new values of self-expression are supposed to transform modernization into a process of human development that gives rise to a type of humanist society that praises human emancipation. According to them, the first phase of modernization changes the belief system of the population but was either capable of bringing democracy or dictatorship as political outcomes. However, the second phase of modernization seems to produce more powerful demands for democracy, given that it is the political system that better warrants freedom for the individual.

They rewrite the theory of individual modernity under the new title of the human development syndrome. This new humanist culture based on self-expression values, they say, affects many domains of life, changing sexual norms, gender roles, family values, religiosity, work motivations, the relationship of people with nature, as well as community activities and political participation. In all these domains, a stronger emphasis on human autonomy is thought to emerge. In their own words:

> "People in postindustrial societies are coming to demand freer choice in all aspects of life. Gender roles, religious orientations, consumer patterns, working habits, and voting behavior all become increasingly matters of individual choice. Massive contemporary changes – from growing gender equality and changing norms concerning sexual orientation, to growing concern for genuine, effective democracy – reflect growing emphasis on human autonomy. These changes are not a patchwork of loosely related phenomena but a coherent pattern that integrates seemingly isolated events into a common whole. As it coalesces, this process of human development broadens human choice and autonomy in all domains of life."

Human development at its higher stages is supposed to be restricted to the group of the most advanced postindustrial societies, and only emerges in developing societies as long as they experience a long path of sustained economic growth. The sequence of human development is summarized in table 1.2. Its common underlying theme is the broadening of human autonomy and choice. The process is divided into three dimensions: the socioeconomic, the cultural and the institutional.

Table 1.2 The Process of Human Development

	Human Development		
	Socioeconomic Dimension	Cultural Dimension	Institutional Dimension
Processes advancing human development	Modernization	Value change	Democratization
Components of human development	Socioeconomic resources	Self-expression values	Civil and political liberties
Contributions to human development	Enhancing people's *capabilities* to act according to their choices	Increasing people's *priority* to act according to their choices	Broadening people's *entitlements* to act according to their choices
Underlying theme	The broadening of human choice (an increasingly humanistic society)		

Source: Inglehart and Welzel 2005.

Modernization fosters value change in the direction of human development, which in turn leads to democratization. Modernization mobilizes the socioeconomic resources that change the living conditions of the population. This change in the living conditions promotes a corresponding gradual adjustment in the value priorities of the population towards self-expression values. As people become liberated from the tougher material constraints, their capability to act according to their choice becomes enhanced. At the cultural level, people start giving priority to individual freedom and choice. This type of values promotes an institutional arrangement of civil and political liberties able to safeguard the new priority of human emancipation.

In their book, they put special emphasis on the effects that values have on the political domain. They underline the importance of values for the advent of a democratic political culture. Democracy, they say, is not just the result of establishing a new constitution or pacts among the political elite, but it strongly depends on the values of the population. The main theme of this process is the widening of human choice. Socioeconomic modernization reduces external constrictions of human choice through the increase in material, social and cognitive resources of people. This, in turn, fosters a greater emphasis of the population on self-expression values, what finally produces increasing demands of political and civil liberties, gender equality, and government accountability. The core of the human development sequence is the expansion of human

autonomy and choice. This aspect becomes more prominent as modernizations advances and deepens. According to them, modernization produces cultural changes that in its later stage necessarily produce democracy.

Another time, Inglehart and Welzel identify two stages within the general modernization syndrome. They perform a factor analysis of multiple indicators combining different countries (78) and waves (4) using the WVS data, and reach two similar value dimensions to the ones Inglehart defined in *Modernization and Postmodernization*: the traditional / secular-rational, and the survival / self-expression. Table 1.3 presents the factor loadings of the indicators that compose each of these value dimensions. Posmaterialist values are just one component of this two-stage syndrome, one which loads on the survival / self-expression axis. Apart from postmaterialist values, in my posterior analysis I will employ two other indicators of individual modernity, to verify individual's capacity of change over the life span. I will use the importance of God in life, one of the components of the traditional / secular-rational values, and tolerance of homosexuality, one item of the survival / self-expression axis.

Table 1.3 Two Dimensions of Cross-Cultural Variation: Aggregate Level Analysis.

	Factor Loadings
Traditional values emphasize the following (Secular-rational values emphasize the opposite):[a]	
God is very important in respondent's life.	.91
It is more important for a child to learn obedience and religious faith than independence and determination. (Autonomy index)	.88
Abortion is never justifiable.	.82
Respondent has strong sense of national pride.	.81
Respondent favors more respect for authority.	.73
Survival values emphasize the following (Self-expression values emphasize the opposite):[b]	
Respondent gives priority to economic and physical security over self-expression and quality of life. (4-item Materialist/ Postmaterialist Values Index)	.87
Respondent describes self as not very happy.	.81
Homosexuality is never justifiable.	.77
Respondent has not and would not sign a petition.	.74
You have to be very careful about trusting people.	.46

Note: The original polarities vary; the above statements show how each item relates to the given factor (factors = 2, varimax rotation, listwise deletion).
[a] This first factor explains 46 percent of total cross-national variation; secular = positive pole.
[b] This second factor explains 25 percent of total cross-national variation; self-expression = positive pole.

Source: Inglehart and Welzel 2005.

These two value dimensions emerge at different stages of the modernization process. Rational-secular values are characteristic of the industrial phase of modernization, in need of a cultural backing of processes such as bureaucratization, centralization, and standardization. However, emancipative values emerge during the postindustrial stage of modernization. As Welzel (2007) puts it: "[T]he de-standardizing and individualizing tendencies of postindustrialization give rise to a human-centric world-view that nurtures emancipative values". The dimension of self-expression, also called emancipative values, has liberty aspirations as its central component (Welzel 2007). It is a syndrome that includes five elements: 1) priority to freedom of speech and the will to participate in government decisions reflected in the postmaterialism scale; 2) a general feeling of well-being, reflected in high levels of life satisfaction; 3) a sense of tolerance for minority groups represented by the acceptance of homosexuality; 4) an esteem of political self-expression reflected in participating in elite-changing actions such as petitions; 5) and a generalized sense of interpersonal trust and confidence in other people. Emancipative values are thought to be a distinctive set of values, different from secular-rational ones.

According to Inglehart and Welzel, industrialization goes together with rational values, but societies with strong rational values are not necessarily democratic. Rational values legitimate rational authority, which can either be democratic or authoritarian. However, emancipative values are necessarily both modern and democratic. The authors argue that these values foster a general questioning of authority. The syndrome of emancipative values is thought to imply a general belief in the equality of all, and an empowerment of the individual and his freedom of choice. These values are supposed to make publics self-assertive and defiant for decision makers. In their empirical analysis, Inglehart and Welzel show that the spread of emancipative values univocally brings increasing levels of democracy to all societies. The extension of emancipative values transforms dictatorships into democracies, and deepens the level of democracy of already democratic regimes. The questioning of authority has the effect of making democracies more efficacious and governments more accountable. It is in this vein how the syndrome of emancipative values is connected to the political culture approach. In fact, self-expression values have been proved to be more linked to democracy than many factors that figure prominently in the literature on democratization, such as interpersonal trust, associational membership, and per capita GDP (see Inglehart and

Welzel 2005). The authors consider that economic prosperity facilitates and promotes democracy through its tendency to give rise to self-expression values. The causal arrow, they consider, flows mainly from culture to institutions rather than the other way around – an issue that has been highly controversial in recent research. Self-expression values are thought to be the main promoters of democracy. In such a way, their findings contradict the claim that democracy can easily be established in any society, regardless of its underlying culture. Instead, they favor the idea that for the success of any democratic institutional design there should be a pre-existing democratic political culture.

Gender Equality and Secularization

Inglehart together with Norris devoted two volumes to a more in depth study of two particular aspects of the individual modernity syndrome: the trends toward gender equality and secularization. In 2003, they published *The Rising Tide: Gender Equality and Cultural Change Around the World*. In this book they examine the changes in traditional sex roles around the world, comparing almost 70 nations at different levels of socioeconomic development, using data from the World Values Survey. The study shows how modernization has changed cultural attitudes towards gender equality, and analyzes its political consequences. In 2004 they published *Sacred and Secular: Religion and Politics Worldwide*, a volume devoted to reexamine the secularization thesis. This book uses up to the fourth wave of the World Values Survey (from 1981 to 2001) across 80 different countries and covering the major religious cults. They present a new version of the secularization theory based on the idea of existential security. It can be understood as an extension of Inglehart's general theory of individual modernity to the specific field of religious values, beliefs, and practices. The main argument is that religiosity persists most strongly among vulnerable populations, especially those in poorer nations where people face survival-threatening risks. In the wealthier part of the world, where existential security is not anymore threatened, traditional religious practices, values and beliefs experience a clear erosion.

Hypotheses

Postmaterialist values are just one of the components of Inglehart's general theory of individual modernity defined as a multi-trait syndrome of social change. As I will show along the empirical parts of the dissertation, this whole theory is based on the assumption that people stick to the values and attitudes they learnt back in adolescence and early adulthood. Aggregate change is consequently understood as the product of cohort replacement, and is thought to be a delayed, gradual process. Inglehart blindly supports the "impressionable years" model of political socialization, which predicts a generalized within-cohort stability of sociopolitical dispositions. However, the attachment to this model seems an intellectual prejudice. As I will demonstrate, it lacks robust empirical support, or in the best cases it is grounded on just weak or flawed evidences. Inglehart's miss-conception might be explained by a number of factors for which he may not deserve all the blame, such as the theoretical assumptions of value stability derived from value theories, the hegemonic model in the field of political socialization, or the will to refute the mistaken ideas of Converse (1964). In the empirical parts of my analysis I will provide a series of evidences which are in contradiction with his arguments. And I will do it by using his very same data, though applying alternative analytical techniques. I will not only rely on a single indicator of individual modernity, but on multiple measures. My purpose is to identify consistent patterns of value and attitude change within cohort-groups overtime. These patterns would contradict the strict "impressionable years" model and would point into the direction of openness to change over the life course. Should that underlying pattern be similar among different components of Inglehart's syndrome, it would become a more robust test of my hypotheses. I believe that the rhythm of modernization is actually faster than predicted, as it could be taking place in real-time.

Taking into account all the arguments presented previously, I formalize a series of general hypotheses that would guide the research. Along each of the empirical parts I will formulate additional and more specific ones.

H1.1: Modernization forces will induce shifts in their associated values and attitudes within all age-cohorts. External or contextual factors that are supposed to shape the values of each generation, will also affect cohorts beyond their "impressionable years".

This will happen independently of the natural process of cohort replacement, as individuals try to adjust to new contexts overtime. This will refute the theoretical assumptions of some value theories that consider values as rather age-stable entities.

H1.2: Aging or life cycle changes will also have the capacity to induce shifts in values. These internal or developmental factors can actually alter the living conditions of the people, and create a sort of new micro-contexts to which the individual needs to adapt. Values may therefore need to be readjusted to the new circumstances. In my analysis I will only be able to indicate whether there is an association between these aging factors and the changes in values, but not the direction of the causality, given the type of data I employ – cross-sections instead of panels. However, this type of effect is not the main focus of my research.

H1.3: The impact of contextual factors during the "impressionable years" would be strong enough to create generational differences that persist overtime. However cohorts will change and adjust to current situations following hypothesis 1 and 2. This will confirm the validity of the lifetime learning model, in spite of the cultural and the institutional ones.

H1.4: The capacity for change may decrease with age, although it will not disappear. Exploring the reasons of that is beyond the scope of this research. They might be diverse, such as the need to weight new experiences by the bulk of past experiences, or the increasing stability of life circumstances as people age, or a hypothetical decrease in mental flexibility.

2. Data and Method

2. DATA AND METHOD

In this part I present the data and methodology of the research. First, I define the scope of the analysis and the type of data I use. I rely on international repeated cross-section surveys, the two major sources being the Eurobarometer Survey series (1970-2002) and the World Value Surveys (1981-2007). These are the same data Inglehart himself employed in many of his studies. Using his very same data but applying alternative statistical techniques and approaches, I will be able to arrive to different conclusions. I justify what countries I finally include in my analysis to make international comparisons, however I mainly concentrate on similar cases: a group of developed nations that are experiencing modernization. There are two main alternatives to analyze changes in belief systems over time: applying structural equation models to panel data, or using some kind of time-series logic to study repeated cross-sectional data of individuals nested within countries, time points or/and generational groups. I choose the second option, which is also the main approach that Inglehart employs. I focus on reviewing Inglehart's measure of postmaterialistic values, and some other items related to individual modernity and included in Inglehart-Welzel's factorial dimensions. A fundamental part of my research consists in disentangling time-related phenomena. I review the discussion about age-period-cohort effects, cohort replacement effects and composition effects. My objective is to identify and quantify the impact of adult learning on value and attitude change among the rest of time-related phenomena. To try to overcome this methodological dilemma, there are a set of strategies that I review. Moreover, the repeated cross-sectional data I employ requires a particular statistical treatment. I apply aggregate time-series analysis to cope with the autocorrelated nature of the errors, and different types of time-series cross-section analysis (TSCS) that use random coefficients models. I define multilevel models to control for the nested structure of the data as I work with pooled samples of different countries surveyed across multiple time points, and as a way to overcome the age-period-cohort dilemma.

Scope of the Analysis and Data

The purpose of this research is to understand how values and attitudes change over time, and to identify the contribution of adult learning to those shifts. Therefore the temporal

dimension is crucial to the analysis. To be able to spot changes I must study dependent variables that actually shift over time. This is why I center my attention in items linked to the modernization process which are supposed to move according to the modernizing drift. However the eventual changes in these indicators happen in a certain space and time. Values and attitudes are usually measured using country representative samples. With respect to the countries eligible to be incorporated in my analysis, I use three criteria of inclusion. First, countries must be experiencing modernization processes, or at least some sort of socioeconomic development over the period of observations. If I should concentrate on stable or stationary countries (which are usually underdeveloped), I would not be able to spot the type of real-time changes I pursue. Second, countries must be observed over a long enough period of time. To grasp certain dynamics of change, as well as to perform age-period-cohort analysis, it is convenient to take into account a wide range of time, of at least 20 or 30 years. In fact, this condition excludes nations not present in longitudinal comparative surveys, that otherwise would have been suitable for the analysis. And third, countries must be included in some of Inglehart's studies that I want to replicate. Actually, this criterion only applies to one of the analysis I perform (see part 3, on postmaterialist values).

In the empirical parts of the dissertation I explain in more detail the logic of the clustering and why I use different types of clusters. However, in general terms, when I perform multilevel analysis (in parts 4 and 5) I try to maximize the number of countries included as second level units (up to 28). A large number of cases is an advisory condition for theoretical and statistical purposes. This clause is especially useful for my purposes, since I take advantage of the amount of cases at the second level to model age-period-cohort effects simultaneously, as well as to test some hypotheses about the dynamics of values and attitudes across individuals, countries and over time. It is also recommended that the heterogeneity of the countries included should be limited in economic, political and cultural terms. Given that I only include countries that have already reached a high degree of socioeconomic development and are experiencing modernization, this concern is also fulfilled. All these considerations restrict the amount of countries available for comparison and induce me to define a most-similar cases design.

The type of data that can be used to explore the dynamics of values and attitudes over time and in a comparative perspective can be of two kinds: panel or cross-sectional. Panel data have some limitations that make them inadequate for my analysis. First, I need a long period of observations, a wide time span that few panels offer. Most panel studies concentrate on a reduced number of waves (three or four to the most), that take place over a restricted time period of six to eight consecutive years. This period of time is likely to be insufficient to grasp the type of mid to long-term developments that I am interested in. Second, studying patterns of individual change is not equivalent to analyzing aggregate social change. Using panel data may not capture well enough some elements of the underlying aggregate dynamics of social shift which are important to this research, such as cohort replacement effects, or other long-term patterns of collective change. Furthermore, the usual statistical techniques to study individual change in panel data, like autoregressive cross-lagged models, are not free of limitations when analyzing the multivariate dynamic nature of that change. Cross-lagged associations could be spurious, caused by unobserved variables, and including several time varying and time invariant covariates may introduce too much complexity in the models. Third, I study values associated to the modernization process, and few panels include this type of indicators. In fact, not many panels include enough subjective variables in general. Fourth, panel data are often limited to one country, even sometimes to one or two generations within a country. This situation would restrict the comparative scope of the research and the capacity to generalize. And fifth, as I want to replicate Inglehart's analysis I need to use similar indicators and similar data to demonstrate his assumptions to be flawed. All these restrictions induce me to use repeated cross-section data. Instead of focusing on individual changes over time, I will analyze shifts in the means or in percentages[19]. There are a set of statistical techniques devoted to make the most of this type of data, which I will briefly refer here. But before, I need to define which set of comparative repeated cross-national surveys I will use. I rely on two types of microdata: on the one hand, the Eurobarometer surveys; and on the other hand, the World Values Surveys. In both cases, the time span covered is long enough to identify the type of patterns I seek. However, both have a different structure that will determine the type of statistical exploitation that can be applied.

[19] As I do not use panel data where the same individuals are surveyed over time, I need to assume that different individuals belonging to the same cohort are equivalent.

The Eurobarometer Trend File

I use the Mannheim Eurobarometer Trend File, a data set that combines the trend questions included in the Eurobarometer surveys conducted across EU member countries between 1970 and 2002. For some years, there is more than one survey per country, but I combine the data on a yearly basis (for reasons that I explain in part 3). This repeated cross-sectional data set was merged by the *Mannheimer Zentrum fur Europaische Sozialforschung* (MZES) and the *Zentrum fur Umfragen, Methoden und Analysen* (ZUMA). As mentioned in the documentation, the file consists of 105 trend questions asked at least five times in standard Eurobarometer surveys. It contains a total of 1,134,384 respondents from 15 EU member nations plus Norway in some years. For an initial group of six countries the time series is longer: Belgium, France, Germany, Great Britain, Italy, and the Netherlands. I focus my attention on this particular subset of countries. The universe is composed by persons aged 15 and over residing in the EU (previously EC) member countries and in Norway. The surveys use multistage national probability samples. The mode of data collection is face-to-face interview.

Most of the trend questions concentrate on measuring attitudes, opinions, and knowledge of the EU institutions and issues (formerly EC), which are of no particular interest for the purpose of this dissertation. However, the file also includes some general characteristics of the respondent, like sociopolitical values or demographic traits, among those, the four-item battery of postmaterialism and several religious indicators. For the analysis of postmaterialist values (part 3) I concentrate on the six countries that appear in table 2.1, for which the time-series of observations is longer. For the study of church attendance, I also rely on data from Austria, Denmark, East Germany, Finland, Greece, Ireland (and Northern Ireland), Italy, Luxembourg, Norway, Sweden, Spain and Portugal. In some of these countries the series are too short for a more refined approach.

Table 2.1 Structure of the Eurobarometer Data for the Case of Postmaterialism.

	France	**Belgium**	**Italy**	**Germany (West)**	**Great Britain**	**Netherlands**
1970	X	X	X	X		X
1971	X	X	X	X		X
1973	X	X	X	X	X	X
1976	X	X	X	X	X	X
1977	X,X	X,X	X,X	X,X	X,X	X,X
1978	X,X	X,X	X,X	X,X	X,X	X,X
1979	X	X	X	X	X	X
1980	X,X	X,X	X,X	X,X	X,X	X,X
1981	X,X	X,X	X,X	X,X	X,X	X,X
1982	X,X	X,X	X,X	X,X	X,X	X,X
1983	X,X	X,X	X,X	X,X	X,X	X,X
1984	X,X	X,X	X,X	X,X	X,X	X,X
1985	X,X	X,X	X,X	X,X	X,X	X,X
1986	X,X	X,X	X,X	X,X	X,X	X,X
1987	X,X	X,X	X,X	X,X	X,X	X,X
1988	X,X	X,X	X,X	X,X	X,X	X,X
1989	X,X,X,X	X,X,X,X	X,X,X,X	X,X,X,X	X,X,X,X	X,X,X,X
1990	X,X,X	X,X,X	X,X,X	X,X,X	X,X,X	X,X,X
1991	X,X,X	X,X,X	X,X,X	X,X,X	X,X,X	X,X,X
1992	X,X,X	X,X,X	X,X,X	X,X,X	X,X,X	X,X,X
1993	X,X,X	X,X,X	X,X,X	X,X,X	X,X,X	X,X,X
1994	X	X	X	X	X	X
1997	X	X	X	X	X	X
1999	X	X	X	X	X	X

Note: 'X' denotes the existence of one survey within that particular year.

The World Values Survey Data

The World Values Survey is probably the cross-national survey project that covers a wider array of countries. The WVS organization claims to have surveyed representative national samples of 97 societies containing almost 90 percent of the world's population. Up to this moment, the EVS/WVS has performed five waves of surveys, going from 1981 to 2007, and a sixth wave (2010-12) is on the making. In each country covered by

the survey, national representative samples are drawn from the population of 18 years of age and older. The minimum sample size is 1,000. They use a stratified random sampling procedure, with a selection of sampling points based on the statistical information of smaller territorial units that vary depending on the country. Each successive wave has covered a broader range of societies than the previous one. The fieldwork is carried out by private survey organizations using face-to-face interviews or phone interviews for remote areas. Each country has a principal investigator from an academic institution who is responsible for conducting the survey in accordance with the fixed rules and procedures. Research teams from different nations have the opportunity to include new items in the questionnaire in each successive wave. Some of the items in the questionnaire have remained over time, while others have not. In this research I have to restrict the analysis to those that appear repeatedly and consistently across waves. Moreover, in my analysis I only consider countries that have appeared at least at two waves. Table 2.2 presents the 28 countries selected for my analysis and the waves in which they are observed. Some of these nations are surveyed more than once per wave, but I combine the data and treat it on a wave basis.

Table 2.2 World Values Survey Data.

	Wave				
	1981-84	1989-93	1994-99	1999-04	2005-07
Australia	X		X		X
Austria		X		X	
Belgium	X	X		X	
Canada	X	X		X	X
Czech Republic		X,X	X	X	
Denmark	X	X		X	
Finland	X	X	X	X	X
France	X	X		X	X
Germany		X	X	X	X
Great Britain	X	X	X	X	X
Hungary	X	X	X	X	
Iceland	X	X		X	
Ireland	X	X		X	
Italy	X	X		X	X
Japan	X	X	X	X	X
Mexico	X	X	X	X	X
Netherlands	X	X		X	X
New Zealand			X		X
Norway	X	X	X		X
Poland		X,X	X	X	X
Portugal		X		X	
Slovakia		X,X	X	X	
South Korea	X	X	X	X	X
Spain	X	X	X	X,X	X
Sweden	X	X	X	X	X
Switzerland		X	X		X
Turkey		X	X	X	X
United States	X	X	X	X	X

Note: ‘X’ denotes the existence of one survey within that particular year.

Disentangling Time-Related Phenomena

My purpose is to verify whether people born at different moments in time, and therefore belonging to different generations, remain stable in their values and attitudes over time or change them to adapt to new contexts. With such an object of analysis, I have to deal with a number of complexities that emerge when working with actual data. The first of them is to disentangle the age, period, and cohort components of change, that appear mixed in the data. Furthermore, as my objective is to understand the evolution of values and abstract or symbolic attitudes, another difficulty is to identify patterns in dynamic data. This is precisely the object of study of time-series analysis. Therefore, I use both aggregate time-series analysis and time-series cross-section analysis. The logic of time-series analysis is to find a structure in dynamic data, identifying trends, seasonal variations, sudden disruptions, dependence on the past, and so forth. It also helps to understand how the evolution of a given dependent variable is influenced by exogenous factors. Another important issue of my analysis is to account for how individuals become influenced by contextual factors. The literature on socialization is increasingly paying attention to contextual effects (see Jennings 2007). There seems to be a shift from a focus on the individual as unit of analysis, to the effects of the context in socialization. Contextual effects are important, and time is just a type of context. In the repeated cross-sectional surveys I analyze, people are nested within countries, periods of time (observations), and generations. To face this hierarchical structure and model contextual effects I employ multilevel analysis of different kind. In fact, multilevel and time-series cross-sectional analysis that uses random coefficients can be considered to be interconnected.

The Age-Period-Cohort Dilemma

My purpose is to analyze how values and abstract or symbolic attitudes change during people's lifetime. This research topic raises a number of empirical concerns, one of which is disentangling the effects of age, period, and cohort (see Glenn 2005, Yang and Land 2008). Although these three components can be conceptually and theoretically distinguished, they appear intertwined in the data. Age effects can be associated to processes endogenous to the individual. They reflect the variation associated to the

biological effects of aging (such as the loss adaptive capacities and physical decay of old age), the accumulation of social experience through the years, and the changes in roles and status linked to social aging. Conversely, period effects represent the impact of exogenous forces: how individuals become influenced by the context that surrounds them at a particular moment in time. They portray the variation over time periods that affect all age groups simultaneously, often resulting from shifts in the social, political, cultural or physical environments. Finally, cohort effects are associated with the variation across groups of people who share similar formative experiences: those exposed to an analogous environment during their "impressionable years", the period ranging from late adolescence to early adulthood. When trying to assess the independent effect of age, period and cohort components on the evolution of a given dependent variable, researchers face a classic dilemma in the social sciences, named as the identification problem. If the three APC components are operationalized into variables (e.g. respondent's age, year of the survey, and year of birth, respectively), it becomes apparent that they are linearly related:

(2.1) $C = P - A$

where C is for cohort, P for period and A for age. Then we will have a linear function such as:

(2.2) $Y = f(C, P, A)$

If we were to plug these variables together into an OLS regression, the assumption of absence of collinearity would be violated. Therefore, differences among types of effects could not be properly identified.

A set of strategies have been proposed to overcome the identification problem (see Fienberg and Mason 1985, Robertson, Gandini and Boyle 1999), although authors such as Glenn (1976) may consider that trying to solve this dilemma is a futile quest. One path of contributions proposes the use of theory and a priori assumptions to exclude one of the three linear components. When one of the APC variables is excluded from the equation, the other two can be safely introduced in the regression model. However, certainty about the results would never be complete, as it would depend on the validity

of the theoretical assumptions. Another strategy is to use the proxy variable approach (Fienberg and Mason 1985, Heckman and Robb 1985, O'Brien 2000). From this point of view, the problem could be solved by including alternative indicators of one of the effects. For instance, respondent's age can be substituted by direct life-cycle indicators such as marital status o children rearing (Tilley 2002b). However, panel data should be employed to properly test the direction of the causal effects in the case of the example. Moreover, sometimes substitutive indicators are not easily attainable.

An alternative strategy to face the APC dilemma that has been used for more than three decades is the multiple classification analysis proposed by Mason et al. (1973, see also Yang and Land 2008 for a review). This technique works with aggregated data from age-by-time period contingency tables, with percentages representing an event where rows indicate age-groups, columns are for periods, and cohorts are represented in the diagonal. This type of data is analyzed using a form of generalized linear model, which needs reference categories of each of the age, period, and cohort variables. The method aims to solve the identification problem by constraining two or more of the age, period, or cohort coefficients to be equal (see Mason et al. 1973). An additional strategy to Mason's method has been to transform at least one of the age, period, or cohort variables so that its relationship to the others is not linear anymore (Mason et al. 1973, Fienberg and Mason 1985). All these type of solutions have been criticized, because of being based on unrealistic assumptions, or because they lead to inexact estimates or because they cannot safely distinguish between the effects of individual factors (Linek 2011, Yang and Land 2006, 2008).

In recent years, Yang and Land presented a potential solution for the identification problem of age-period-cohort effects in repeated cross-section surveys (see Yang 2006, 2008; Yang and Land 2006, 2008). Instead of grouping the data into aggregate categories as in Mason's method, they propose taking advantage of the individual-level information to perform a finer grained regression. This regression should be of a hierarchical kind, given that conventional fixed-effects regression models may violate the independence-of-errors assumption. In particular, they apply a type of hierarchical regression named cross-classified random-effects (CCREM) to repeated cross-sectional survey data that assumes a clustering of responses into two kinds of contexts: time periods and cohorts. In the model, the linear dependence of age, period, and cohort is

overcome using an alternative grouping of the variables that takes into account the different ontological status of these components. Age is considered to be a characteristic specific to an individual at the time of data collection, while period and cohort are understood as contexts. In the first level age is assumed to be a feature of an individual in the year of data collection and enters the model as a fixed effect. In the second level, a concrete individual is a member of more groups which do not overlap and is nested in and cross-classified by two types of social contexts: period and cohort. Individuals interviewed at a particular time period belong to different cohorts, and members of a concrete cohort are interviewed at various time periods. In such way, one individual can concurrently belong to two different types of second level units (period and cohort). It is therefore necessary to specify a hierarchical cross-classified model. At the individual level, this model can be depicted in the following way:

$$(2.3) \quad y_{i(jk)} = \beta_{0i(jk)} + \beta_{1i(jk)} x_{i(jk)} + \varepsilon_{i(jk)}$$

Where the score on the dependent variable $y_{i(jk)}$ of individual i within the cross-classification of cohort j and period k is modeled by the intercept $\beta_{0(jk)}$, an independent variable "age" $\beta_{1(jk)}x_{i(jk)}$ and an error term $\varepsilon_{i(jk)}$. The subscripts (jk) are written in parentheses to show they are conceptually at the same level (see Hox 2002). They also indicate that the intercept varies independently across both generations and periods. This intercept is modeled as:

$$(2.4) \quad \beta_{0jk} = \gamma_{00} + u_{0j} + v_{0k}$$

where u_{0j} is the residual error term for cohorts and v_{0k} is the residual error term for time periods. Then the complete model can be written as:

$$(2.5) \quad y_{i(jk)} = \gamma_{00} + \beta_{1i(jk)} x_{1i(jk)} + u_{0j} + v_{0j} + \varepsilon_{i(jk)}$$

where the outcome variable is modeled with and overall intercept γ_{00}, a residual error term u_{0j} for cohort j and a residual error term v_{0k} for time period k, and the individual error term $\varepsilon_{i(jk)}$ for individual i in the cross-classification of cohort j and period k. The individual level explanatory variable age, as well as other level-one predictors that might be added, is usually not allowed to vary across periods and cohorts. In such a

way, the cross-classified random-effects model makes it possible to estimate concurrently the effects of age, period and cohort on the dependent variable. This possibility is crucial to my analysis, since it allows me to perform a proper test of the different models of learning. I can verify whether values and abstract or symbolic attitudes linked to modernization can be modified in real-time by exogenous forces represented by period effects, or endogenous processes embodied by age effects, as well as other life cycle indicators. Should values be age-stable, as the "impressionable years" model predicts, only significant cohort effects would be spotted.

The different strategies presented here are oriented to identify and quantify the independent effects that age, period, and cohort have on the dynamics of a given dependent variable. However, there are more elements to be accounted in the analysis of the evolution of aggregate means and percentages over time. One of them is the quantification of cohort replacement effects, a central issue in Inglehart's theory and a proof of the power of the "impressionable years" model of learning. Cohort replacement effects are due to the progressive substitution of cohorts in society as a result of the natural demographic movement of the population. They are a sort of delayed generation effects caused by the natural changes in the generational composition of a society. A prominent strategy to account for this type of effects can be found in Abramson and Inglehart (1992). Across my empirical analysis, I apply this and other strategies that follow the same logic. The idea is to quantify the net contribution of cohort replacement to the aggregate change in the dependent variable, clean of the effects of age, period and cohort. One way of doing it is to create simulated data by artificially eliminating the effect of cohort replacement and comparing them to actual data (Abramson and Inglehart 1992). Another alternative to control for cohort replacement effects is to exclusively focus the analysis on the evolution of a subset of cohorts not suspicious of suffering from significant mortality rates over the period of observations. In such a way, overall changes in the dependent variable over time could only be attributed to real-time adjustments of the members of those cohorts.

One additional aspect that must be controlled when performing age-period-cohort analysis is the impact of confounders. Cohorts can be different in their composition with respect to some characteristics unrelated to socialization *per se*, what may cause a sort of spurious association also known as composition effect. This situation would take

place if cohort effects disappear once additional sociodemographic characteristics are controlled for. The reason would be that the true source of variation in the dependent variable is not formative experiences but other attributes that overlap with cohorts. In my analysis, I account for this possibility by introducing enough control variables in the models at the individual level. Among these controls I include indicators of life cycle changes such as being married. As I only work with cross-sectional data, I am not able to ascertain the casual effect of being married in the likelihood of individual change due to the problem of reverse causality. I would need panel data for that purpose. What I can show in my analysis is only the presence of an association.

The Logic of Time-Series Analysis

It could be argued that values systems would tend to be stable in the absence of endogenous or exogenous pressures. However, in the real world this ideal situation is just one of the possible scenarios, and probably not the most likely. In fact, modern times are continuously defining new contexts for individuals and bringing constant pressures for adaptation. What people learnt back in the formative years might no longer be adaptive to their new environment, so that adjustments would be unavoidable. This quite reasonable situation, as a matter of fact, would overflow the logic of the "impressionable years" model, as individuals would need to adapt to the new context whatever their original point of departure was. In this dissertation I pay special attention to the exogenous pressures on value systems, often summarized as period effects. The reason for that is in part substantive and in part practical. From a substantive point of view, endogenous change or age effects might not be relevant enough for understanding an aggregate social change such as modernization. Besides the fact that people could age in a different way at different stages of history, aging would tend produce a zero sum effect in aggregate terms. Social change in the sense of modernization cannot be rooted solely on age effects, because sooner or later society would end up in a stationary situation. The modernization process is thought to be patterned instead as a trend towards a new type of society. Such a significant social change should emerge from period or generation effects that consistently transform the position of a society into a particular direction or following a specific trend. This does not mean that age effects are unimportant for understanding individual change in values during adulthood. If people

change as a consequence of endogenous pressures, it is also a proof that values can actually shift during adult years. The practical reason for focusing on the exogenous or contextual effects is related to the type of data I employ. I do not use panel data that would be optimal for the study of individual changes as a result of life course transitions (endogenous shifts). I employ repeated cross-sectional data instead, in what Glenn (1980) defined as an intracohort trend study: samples of individuals independently drawn from each cohort at time 1 and 2 (and so on), which are not a measure of change at the individual level. While a panel study reveals how many individual changes have taken place, an intracohort trend study discloses the net effect of those changes in the form of period effects.

Period and generation effects are similar in the sense that both capture exogenous or contextual influences. The difference is that cohort effects do it only for a particular stage in individual's life course: the formative years. But beyond these restricted borders, I argue that people still remain exposed to those same contextual influences in the form of period effects. The dynamics of contextual effects on a given dependent variable can be studied using the logic of time series analysis.

I use the logic of time series analysis to understand the dynamics of values and attitudes over time. Time series analysis is devoted to explain the patterns that lie beneath the evolution of a given phenomenon. The development of a particular variable over time might be characterized as being dependent on its own past (autocorrelated at different degrees), having a trend, seasonal variations, or being stationary. These patterns can either be deterministic or stochastic. Time series analysis can focus on the study of one variable, or on the dynamic relations among different variables (see Diebold 2006 for a review). A characteristic of time series data is that observations are not mutually independent. The order in which they appear is important due to this dependency. Moreover, observations are not obtained from a same random variable. As a result, data analysis cannot be based on the assumption that we have T independent observations from the same random variable, as we do in OLS regression. To properly analyze this type of data a set of statistical tools and considerations are mandatory. Detailed discussions can be found in Box, Jenkins and Reinsel (1994), or Kendall and Ord (1989), among others.

As the data I employ is of a time series nature, I need to introduce adjustments in my models to account for this dependency among the observations. Moreover, my hypotheses have a dynamic character. The modernization process is a transformation that drives societies into a particular direction. It could be characterized as an exogenous factor that has a trend. This dynamic factor is what influences the type of values and attitudes I study: those that constitute the individual modernity syndrome. According to the "impressionable years" model these influences will only happen at a particular moment in the life of individuals: the formative years. After receiving its imprint, generations would be age-stable and follow a stationary pattern. In such a way, the trend in the exogenous covariate would not be fully translated into values or attitudes, given that they are not so malleable. Subjective variables would change just gradually at the slow rhythm of cohort replacement, which is just as a fade image of the structural changes. However, from a lifelong openness perspective, modernization would have the capacity to affect values in real-time, all over the life cycle. The values of each cohort would continue to reflect the trend derived from the exogenous modernizing forces. This trend would be identifiable both in the form of generational differences –past period effects– that would lead to cohort replacement, as well as in actual trends affecting the already existing cohorts. How does this situation translate into the logic of age-period-cohort effects? I will be able to spot not only generational differences in the data, but consistent period effects that most of the times could be treated as linear, representing the linear time trend of modernization. Introducing such time trend will be necessary both to understand the dynamic of the dependent variable and to correct for the autocorrelated nature of the errors.

To sum up, the logic of time series analysis would help me to understand the nature of the phenomenon I study, just as it does to decompose the data into its age, period, and cohort components. My purpose is to discover whether values are stable or change over time within generations. Moreover, I want to know whether the eventual shifts are only a product of cohort replacement, or are also related to real-time adjustments, contradicting the "impressionable years" approach. Should there be a trend in the exogenous factor, values and attitudes would reflect it in a quite contemporaneous way, and not just through the delayed pace of cohort replacement. This means that, in countries experiencing continuous modernization processes over time, I expect to find a

corresponding trend in values and attitudes that would not only be related to cohort replacement effects.

Although in my analysis I apply the general logic of time-series, I deal with a type of data that has some limitations. One restriction is the total amount of observations. Even though the period of time under scrutiny is usually wide enough, between 20 to 30 years, the number of observations is rather low, from around 30 in the EB data to 5 in the WVS data. I overcome this problem by the use of specific techniques that make the most of each type of data, allowing both the application of the time-series logic and the framework of age-period-cohort analysis. Time series analysis tends to use large series of data to identify patterns. However, if we have clear hypothesis about the dynamics of a given phenomenon, we should be able to spot signals of it even using only few observations. In other words, over a period of 30 years, the trend towards modernization should be so clear that it would emerge even when only five scattered observations were considered.

I use two different approaches. First, I perform time-series analysis on aggregate data from the EB series on postmaterialism. To overcome the age-period-cohort dilemma, I construct a counterfactual series with no cohort replacement, and compare it to the actual series. I apply univariate time series analysis to describe the dynamic patterns of both types of series, as well as multivariate analysis to predict their evolution as a function of inertia and exogenous forces. Second, I use the complete individual-level data from the repeated cross-sections of the EB and WVS to overcome the limitations of aggregate time-series analysis. I apply a type of time-series cross-section analysis (TSCS) where I use random coefficients (see Podestà 2002 for a review of TSCS methods). TSCS allows me to take advantage of the great quantity of cases both at the individual and country level, as well as to concurrently model the age-period-cohort effects. When the amount of observations is large enough, as in the church attendance case, I perform cross-classified random effects models (CCREM) of one country. CCREM are in fact a type of TSCS that use a random intercept to decompose age-period-cohort effects and partially account for the underlying dynamics of a given phenomena (with some limitations, see Stegmüller 2012). When the amount of observations over time is insufficient for CCREM (as in the case of WVS data), I apply another type of random coefficients models. It is a hierarchical model where individuals

are nested within countries, being time period an attribute of the country. In these models I compensate for the lack of observations over time with a large amount of units at the individual level and countries at the contextual level. Moreover, I still can concurrently estimate the age-period-cohort components by considering age and generation an individual-level characteristic, while time periods turn into a second-level attribute, a feature of a given country. This type of design could be considered another kind of TSCS model of random coefficients.

TSCS models include the Parks-Kmenta method (see Kmenta 1986), the Beck and Katz method (1995, 1996), the covariance model, and the error component model, also known as random intercepts model. In this last family of models is where I can inscribe the ones I perform along the dissertation. I use random intercepts to capture the differences in behavior over time and space. If we would assume that the level of the dependent variable is homogenous across time periods and countries (or cross-section units), we would risk that error contains both temporal and cross-section components reflecting time effects and cross-section effects (see Podestà 2002). If different time period and cross-section are consistently higher or lower on the dependent variable, the common intercept β_0 estimated in OLS regression will be an average of all time period and units that may not be representative for any one of the single groups of observations. To deal with this problem we can either employ the covariance model or the error component model. Both models use a varying intercept term in order to capture the differences in behavior over time and space (Judge et al. 1985). They can be written in the following way:

$$(2.6) \qquad y_{it} = (\beta_0 + \mu_i + \lambda_t) + \sum_{k=2}^{k} \beta_k x_{kit} + e_{it}$$

With the intercept $\beta_{1it} = \beta_0 + \mu_i + \lambda_t$. Where β_0 is the "mean intercept", μ_i represents the unit effects and λ_t represents the time effects. If the term μ_i and λ_t are fixed, it is a covariance model or a dummy variable model. When they are random, it is an error component model.

Space and Time as Contexts in Multilevel Models

The analysis of contextual effects has gained momentum in the social sciences during the last decades. This type of analysis underlines how individual behavior is affected by the social context in which it takes place. Individuals are nested within the social contexts in which they live, and part of their thoughts and actions are the result of belonging to and interacting within these contexts. A context can be a spatial entity: a particular place in which clusters of individual units coexist, such as households, municipalities, or countries; but it can also be a temporal dimension[20]. Human action occurs at some place and at a given moment in time. For example, the same country observed at two distant points in time could look very dissimilar. In most occasions social data has a natural nested pattern, so that it is structured hierarchically (e.g. individuals nested in countries, observations nested in individuals, and so forth). In statistical analysis this type of information generates a number of problems because the clustering of observations violates the assumption that the errors are independent. This assumption is crucial for common data analysis techniques such as ordinary least squares. To ignore the multilevel character of the data may lead to estimating incorrect standard errors and having inflated Type I error rates (see Steenbergen and Jones 2002). To deal with this problem, multilevel analysis techniques have been developed. This type of technique allows combining multiple levels of analysis into a single comprehensive model where different predictors can be specified at each level. In such a way, the possibilities of a model misspecification are lower than with a single-level one. In level-1 the model can be expressed in the following way:

$$y_{ij} = \beta_0 + \beta_{1j} x_{ij} + \varepsilon_{ij} \tag{2.7}$$

where y_{ij} is the level-1 dependent variable for a level-1 unit *i* nested in level-2 unit *k*. Then x_{ij} is the level-1 predictor and ε_{ij} the level-1 disturbance term. The model is equivalent to a simple regression model with the difference that regression parameters are not fixed but vary across level-2 units (expressed by *j* subscripts). The variation of level-1 regression parameters is a function of level-2 predictors such as:

$$\beta_{0j} = \gamma_{00} + \gamma_{00} z_j + \delta_{0j} \tag{2.8}$$

[20] It can also be a network, or a political or social grouping.

and:

$$\beta_{1j} = \gamma_{10} + \gamma_{11} z_j + \delta_{1j} \tag{2.9}$$

Expressions 2.8 and 2.9 together are the level-2 model. The γ-parameters denoted fixed level-2 parameters, z_j the level-2 predictor, and δ the model disturbances. The complete model can be depicted into a single expression by substituting 2.8 and 2.9 into 2.7:

$$\begin{aligned} y_{ij} &= (\gamma_{00} + \gamma_{01} z_j + \delta_{0j}) + (\gamma_{10} + \gamma_{11} z_j + \delta_{1j}) x_{ij} + \varepsilon_{ij} \\ &= \gamma_{00} + \gamma_{01} z_j + \gamma_{10} x_{ij} + \gamma_{11} z_j x_{ij} + \delta_{0j} + \delta_{1j} x_{ij} + \varepsilon_{ij} \end{aligned} \tag{2.10}$$

The specification of this model also implies a set of assumptions concerning the disturbances (see Steenbergen and Jones 2002). Furthermore, multilevel models permit the study of causal heterogeneity by specifying cross-level interactions. An additional virtue of this technique is that it can provide a test of the generalizability of findings in comparative research[21]. It strives to respond the question of whether the conclusions obtained in one particular context or time period are also applicable to other contexts or periods.

The nature of the data I employ is hierarchical. In the frame of multinational repeated cross-sectional surveys, individuals are nested within nations and observations done at different moments in time. My models take into account this clustering of respondents within country and time periods, while others include time as a country-level characteristic. Both specifications are tenable. On the first case, each survey performed at a given country and moment in time is considered a separate context, and variance components are specified to allow the intercept to vary according to survey. In these cases, models include data from 28 countries that pertain to around 135 different contexts, because all countries were surveyed across more than one temporal unit (or wave). In other cases, the second level unit is considered to be just the country, and time is set as a country feature. Treating the time variable as a characteristic of the country context is as well justifiable. The same spatial context can be observed at different moments in time, retaining its singularity but suffering slight variations. Besides considering temporal and spatial units as contexts, when I apply cross-classified

[21] In the case contextual units are randomly sampled.

multilevel models (CCREM) I also define generation as a context –within the frame a single country analysis. All in all, I believe that multilevel models are an optimal tool for my analysis. They allow me to model the effects of time, to account for country differences, to take advantage of the large amount of individual-data and country-level information from repeated cross-sections, and to concurrently model the age-period-cohort components which is crucial to my hypotheses.

Summary

I study change in values and attitudes during adult years. My purpose is to analyze the capacity of adults to shift basic values and attitudes over the lifespan to adjust to new social and political realities. In socialization literature it is still a commonplace to consider fundamental psychological dispositions to crystallize during adolescence and early adulthood. The implications of such an assumption are stability over the lifespan and the constitution of generation units. Under this paradigm, value and attitude change takes place basically as a product of generational replacement. I propose an alternative approach that clearly takes into account the possibility of individual change during adult years. Among the possible causes of that change, there are exogenous factors related to periodic components. In my case these components would be connected to the modernization process: economic growth, welfare extension, and insecurity reduction, among others. The process would progressively transform society in such a way that an hypothetical individual who has experienced the hardships of living in a developing country during his youth could end up living in the secure environment of a postindustrial society at the end of his days, and all in the course of a single lifetime. Contextual changes establish a particular scenery for life circumstances, and individual values need to adapt to these changing circumstances. Exogenous or contextual factors may leave a more profound imprint during the formative years, leading to the constitution of generations. However, I argue that these contextual factors still exert an influence during the whole adult life. Changes can also come from endogenous processes, as those linked to aging.

In the following empirical parts I address the analysis of three supposedly age-stable dimensions of modernization: postmaterialist values, religious values and practices, and

moral values. These items are subsumed into the more general syndrome of individual modernity described by Inglehart in his theory of post/modernization (1977, 1981, 1990, and Welzel 2005). According to this author, the changes over time in those variables are attributable mainly to generation effects; consequently cohort replacement is thought to be the motor of macrosocial transformations. I will refute this misconception using different methodological strategies. First, I will replicate a method developed by Abramson and Inglehart (1986), consisting in the creation of a counterfactual society, to test the effects of cohort replacement against period effects in the dynamics of postmaterialism. I will analyze the data using the logic of aggregate time-series analysis. Second, I will apply a set of hierarchical models, connected to time-series cross-section analysis, to identify the role of age, period, and cohort effects, to model contextual effects, and to account for the dynamic nature of the phenomena. By applying these group of techniques combined with a clear hypothesis to be tested, I will refute the age-stability hypothesis. Instead of observing cohort stability over time I would be able to spot profound changes produced by both exogenous and endogenous factors. Given that exogenous factors would have a trend, the same that produces generational differences, cohorts would evolve over time following a parallel drift to the one that produces intergenerational differences. It would also be likely that age effects would tend to oppose period-cohort effects, driving people to more materialist, religious and intolerant positions as they age.

3. Postmaterialist Values and Lifetime Learning

"The political values of West European publics are changing and generational replacement plays a major role contributing to this change."

Abramson and Inglehart (1992)

3. POSTMATERIALIST VALUES AND LIFETIME LEARNING

Research on value change and stability tends to underline the importance of generational factors, being Inglehart's theory of postmaterialism an example of it. In his theory, formative experiences shape the values of each age-cohort, and social change takes place progressively due to the force of generational replacement. Here, I analyze survey data covering a period of observations wider than the one Inglehart used to draw his conclusions. Applying aggregate time series techniques, I find relevant changes within each generation over time. I show how an important adult learning process in the field of postmaterialist values has taken place, which has been neglected by the empirical literature. Contrary to Inglehart's point of view, I conclude that period effects constitute not just minor short-term influences affecting the "normal" change due to generational replacement, but a systematic intracohort trend linked to the European economic prosperity of the last decades. Abramson and Inglehart (1986, 1987 and 1992) developed a method to test the amount of value change caused by generational replacement. I replicate their procedure using the same data but expanding the period of observations. Nowadays it is possible to analyse a wider time series of the cross-section data Inglehart and colleagues used. Across many Western European countries there has been a considerable amount of change in postmaterialist values between 1970 and 1999. In general terms, the level of postmaterialism has clearly increased. The question is whether this change is attributable almost entirely to generational replacement, or if the increasing economic security experienced by all cohorts over those years has had something to do with it. I test the contribution of intracohort value change to the increase in the level of postmaterialism compared to the effect of generational replacement.

I replicate Abramson and Inglehart studies (1986, 1987 and 1992) to prove with new data the effect of generational replacement on postmaterialist value change in comparison to intracohort change. I verify whether the series of postmaterialism with generational replacement and the counterfactuals without replacement are stationary or do follow some kind of trend. I study both series to find models that best fit them. Both series seemed to be influenced by exogenous variables: inflation rates and other

economic and social factors. I define regression models with lagged dependent variables to explain the dynamics of postmaterialism with and without cohort replacement. The implications of the results lead me to support the lifetime learning model.

Inglehart's Theory of Postmaterialism

The theory of materialist/postmaterialist value change developed by Ronald Inglehart (1971, 1977, 1990 and 1997) could be used to test some assumptions of the cultural, the institutional and the lifetime learning models. The two pillars of Inglehart's theory are the scarcity hypothesis, and the socialization hypothesis. Following the first one, people's priorities are thought to reflect their economic environment. Individuals attribute more value to things that are relatively scarce. This concept of scarcity is based on Maslow's hierarchy of needs. Human beings first attend the needs which are most urgent, and only when fulfilled, they care for other ones. Fundamental needs are physiologic, as well as linked to physical and economic security. Once these needs are satisfied, people try to attend other necessities which are less materialistic and more symbolic or expressive, such as social relations, quality of life or self-fulfilment. However, according to Inglehart, the values of people do not directly reflect their actual material security but their subjective perception of it. This perception is supposed to be strongly conditioned by pre-adult socialization, following the impressionable years' model of political learning.

The socialization hypothesis establishes that people who experienced material deprivation and economic insecurity in pre-adult years remain conditioned by those experiences through their life-cycle. Even though their living conditions improve thereafter, they will continue to praise those material aspects which were scarce during their youth. In a similar way, people who experience material well-being during their "impressionable years" do not focus only on attaining material needs because they take them for granted. Following the socialization hypothesis, Inglehart sustains that the diffusion of postmaterialist values does not take place automatically. It happens in a gradual way, basically as a consequence of generational replacement. Old cohorts carrying predominantly materialist values are substituted by new and more

postmaterialist generations. As Inglehart states (1990), after a period of a drastic increase in economic and physical security, we would expect age group differences to continue, as these groups have lived different formative experiences. There would be a time lag between changes in economic environment and its political consequences, following the logic of cohort replacement. Therefore, to him it is cohort effects what really matters –through generational replacement, and not period effects.

The assumptions of this theory fit clearly the cultural model of learning. It represents a particular type of cultural socialization in which progressive change takes places as a consequence of a broad social process, namely modernization. Every new cohort experiences a slightly different context as a consequence of this ongoing macrosocial transformation. In this scheme, the final source of change in values is supposed to be economic development or material welfare of individuals and nations. Theory predicts that countries experiencing a long enough period of economic prosperity should increase their levels of postmaterialist values at the rhythm established by generational replacement. In these nations, which fit the profile of many EU countries, stable and monotonic generational differences in values may appear in response to the slightly different context each cohort has experienced in its formative years.

Inglehart identified clear differences in the levels of postmaterialism between age groups in a series of cross-sections surveys (1977). The younger the group the more postmaterialist it was. A debate emerged about whether those differences were due to generation, life-cycle or period effects. Most of the energies were spent on discarding life-cycle effects. If age differences in materialist/postmaterialist values were caused by age effects, the consequences for macrosocial change would have been negligible. In a situation of demographic stability, a perfect life-cycle effect would have had a zero-sum impact in the overall level of postmaterialism. A value transformation with deep long-lasting effects on society should come from a progressive and sustained generational change. A potential life cycle effect would have been the main enemy of postmaterialist theory, as it would have questioned its long-lasting effects in society. Inglehart (1990) provided evidences that showed no signs of an increase in materialist values when cohorts age –though avoiding the use of proper methodology to rule out the APC conundrum.

When it comes to the discussion about period effects the situation appears less clear. Inglehart maintains that period effects are already included in his theory through the scarcity hypothesis (Inglehart 1990, Abramson and Inglehart 1992). Although he admits the possibility of both generation and period effects operating together in materialist/postmaterialist values, he considers the latter to be of a second order (Inglehart 1990). Period effects are thought to respond to short-term fluctuations in the economic environment, especially inflation, and to have no lasting impact in the long-run (Abramson and Inglehart 1986, Inglehart 2008, Inglehart and Welzel 2005). Therefore, Inglehart equates period effects to short-term random fluctuations (2008).

When during a period of time the exogenous causal factor of materialist/postmaterialist values, namely economic environment, does not follow any particular tendency (nor deterministic neither stochastic) but apparently random oscillations, aggregate change in postmaterialism would come almost entirely from generational replacement. Yet, what if the economic environment is not experiencing fluctuations, but a consistent upward trend? If we are admitting both generation and period effects to happen, we would expect a change in values parallel to that economic trend, operated both by generation and period factors. However, Inglehart seemed to focus only on generation effects and cohort replacement. In fact, Abramson and Inglehart's (1986, 1987 and 1992) developed a method to test the amount of value change caused by generational replacement. I reproduce their method but expanding the period of observations to test the effect of generational replacement against that of intra-cohort change.

Data and Methodology

The data source I use is the Eurobarometer Surveys (specifically the microdata from the Eurobarometer Trend File), a series of national surveys sponsored by the European Union which covers the period between 1970 and 1999. I address my attention to the same countries that Abramson and Inglehart analysed (1986, 1987 and 1992): Germany, Great Britain, the Netherlands, France, Belgium and Italy. For some years there is more than one survey per country. However I treat the data on a yearly basis combining the

subsamples, both to reproduce Abramson-Inglehart's analyses and as a way to reduce sampling error.

The items used to measure value priorities are also those employed by Inglehart and his colleague. It is the short four-item version of the materialism/postmaterialism scale[22]. In the four items scale respondents are asked to select what they believe their country's two top goals should be among the following four choices:

1. maintaining order in the nation;
2. giving the people more to say in important government decisions;
3. fighting rising prices;
4. protecting freedom of speech.

Respondents who select "maintaining order" and "fighting prices" are classified as materialists, and those who choose "giving people more say" and "freedom of speech" are classified as postmaterialists. The rest of combinations (one materialist and one postmaterialist response) are considered to be "mixed". For the aggregate data analysis of nations, years and cohorts, I also use the percentage difference index computed by subtracting the percentage of materialists from the percentage of postmaterialists. This measure is equivalent to a mean score and ranges from –100 (completely materialist) to 100 (fully postmaterialist).

Table 3.1 presents the distributions of value types together with the percentage difference index (PDI) for each of the six countries. In France, the Netherlands, Germany and Britain the percentage of materialists has clearly dropped at the same time that postmaterialists have risen. If we pay attention to the PDI –a quicker way to grasp the net effect of changes in value types, in Italy there has been an increase since the beginning of the eighties, although at the end of the series it has suffered a sharp decline. Belgium is a case with no clear trend in materialist/postmaterialist values.

[22] There have been discussions about the convenience of this measure, and the superiority of the larger battery of indicators (Inglehart 1977). Unfortunately, the 12-items battery is only available in a few time points of the series, and its use would make it not comparable to Abramson-Inglehart analysis.

A crucial part of Inglehart's analysis is defining generational groups to explore their differences in values over time. I establish nine cohorts following his classification, with only a slight variation[23]. Moreover, Inglehart combines the samples of the six countries to increase the number of cases per cohort and year. He argues that by doing so the reliability of the analysis is improved. I follow his procedure applying the European weighting factor when the six national samples are taken together, to adjust the country samples to the real proportions of the population. Table 3.2 shows the PDI score of each cohort over the period between 1970 and 1999. Table 3.3 indicates the percentage of people in each cohort with respect to the total year sample. It can be seen how older generations decrease in number as time passes.

[23] In the Eurobarometer Trend File the variable age in years is not included in the first surveys of the period. There are only age groups to match Inglehart's generations. That is the reason why there is a slight one-year mismatch between Inglehart's cohorts and mines.

Table 3.1 Percentage Distribution of Materialist/Postmaterialist Values in Six Western European Societies, 1970-99*.

	Year of Survey																							
	1970	1971	1973	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1997	1999
France																								
Materialist	38.3	42.9	36.8	41.9	39.9	31.9	37.3	43.0	43.9	38.3	36.9	37.3	34.2	35.0	30.5	27.9	24.6	26.8	26.8	28.3	28.7	25.4	24.9	25.8
Mixed	50.6	46.4	52.7	45.9	49.0	52.1	48.2	45.5	47.2	49.4	50.8	51.7	53.3	52.4	53.6	53.8	53.6	55.2	54.0	52.9	52.8	55.6	52.7	52.9
Postmaterialist	11.1	10.7	10.5	12.2	11.1	16.0	14.5	11.5	8.9	12.3	12.3	11.0	12.6	12.6	15.9	18.3	21.8	17.9	19.2	18.8	18.5	19.0	22.4	21.3
N	1966	2013	2144	1302	2173	2057	937	1878	1909	1872	1943	1932	1956	1919	1889	1931	3892	2911	2938	2886	2952	956	954	968
Score on index**	-27.3	-32.2	-26.3	-29.7	-28.7	-15.9	-22.9	-31.6	-34.9	-26.0	-24.6	-26.3	-21.6	-22.3	-14.5	-9.7	-2.8	-8.9	-7.6	-9.5	-10.2	-6.4	-2.5	-4.5
Belgium																								
Materialist	32.6	30.2	25.9	30.6	32.7	30.5	33.0	37.6	36.6	41.1	45.3	36.9	46.1	41.6	36.3	32.9	27.4	29.1	28.9	31.7	32.4	35.1	30.0	33.1
Mixed	53.2	54.8	60.8	56.3	56.7	56.9	52.1	52.3	53.7	49.2	46.2	53.8	45.8	45.4	50.3	52.7	55.3	54.3	53.4	53.9	55.1	52.5	58.6	54.7
Postmaterialist	14.2	15.0	13.3	13.1	10.6	12.6	14.9	10.0	9.7	9.7	8.4	9.3	8.1	13.0	13.4	14.4	17.2	16.6	17.7	14.4	12.5	12.4	11.4	12.3
N	1239	1353	1245	1012	1783	1835	869	1791	1708	1854	1923	1952	1914	1883	1850	1866	3696	2793	2850	2857	2831	958	933	956
Score on index	-18.4	-15.3	-12.6	-17.5	-22.1	-17.9	-18.1	-27.6	-26.9	-31.4	-36.9	-27.6	-38.0	-28.6	-22.8	-18.5	-10.2	-12.5	-11.2	-17.3	-19.9	-22.7	-18.6	-20.8
Netherlands																								
Materialist	29.3	35.8	30.4	31.4	32.5	26.5	29.1	36.4	33.3	29.8	23.7	25.8	18.4	17.5	18.6	16.0	13.9	15.8	15.4	15.4	18.9	16.6	11.9	14.2
Mixed	52.5	55.1	57.8	54.2	50.6	49.9	52.2	49.8	52.3	53.4	56.6	55.9	56.9	59.9	57.4	58.5	57.9	59.0	57.4	58.7	59.5	63.1	62.5	64.0
Postmaterialist	18.2	9.1	11.8	14.4	16.9	23.6	18.7	13.8	14.5	16.8	19.8	18.3	24.7	22.5	23.9	25.5	28.2	25.2	27.3	25.8	21.5	20.2	25.6	21.8
N	1388	1607	1406	1058	1891	1997	1047	2019	1914	1979	1990	1961	1975	1950	1883	1882	3881	3047	2941	2918	2919	1020	1008	982
Score on index	-11.1	-26.7	-18.7	-16.9	-15.6	-2.9	-10.4	-22.6	-18.8	-13.0	-3.9	-7.5	6.3	5.0	5.3	9.5	14.3	9.3	11.9	10.4	2.6	3.6	13.8	7.6
Germany																								
Materialist	46.2	44.6	44.8	40.7	42.0	38.0	36.2	41.9	44.0	35.1	27.1	23.5	24.5	17.8	18.0	19.0	18.9	20.8	23.9	29.9	29.8	30.6	23.9	25.3
Mixed	43.3	45.8	47.3	47.8	49.5	51.1	52.0	47.8	48.6	51.1	54.8	57.3	56.5	64.9	59.7	57.7	61.0	60.1	58.5	56.7	58.5	53.8	62.8	59.6
Postmaterialist	10.5	9.7	7.9	11.5	8.5	10.9	11.8	10.3	7.4	13.8	18.1	19.2	19.0	17.2	22.3	23.3	20.0	19.2	17.6	13.4	11.7	15.6	13.3	15.0
N	1865	1923	1953	891	1783	1841	948	1868	1739	1948	1875	1792	1852	1906	1807	1924	4276	2988	3030	2992	3046	991	980	992
Score on index	-35.7	-34.9	-36.9	-29.2	-33.5	-27.1	-24.4	-31.5	-36.5	-21.3	-9.0	-4.3	-5.5	-0.6	4.3	4.3	1.1	-1.6	-6.3	-16.4	-18.1	-15.0	-10.7	-10.3
Italy																								
Materialist	36.5	47.1	42.0	40.1	47.3	44.7	47.0	55.7	54.8	46.0	51.4	43.0	44.1	39.1	34.4	29.8	29.4	27.6	28.7	27.9	25.5	23.3	29.2	37.5
Mixed	50.7	45.1	49.7	48.3	43.7	45.9	43.3	39.6	39.9	46.5	43.5	48.5	47.6	51.5	53.8	57.9	57.9	60.3	59.4	61.5	63.1	59.1	61.0	54.7
Postmaterialist	12.8	7.8	8.3	11.7	9.1	9.4	9.6	4.7	5.3	7.5	5.2	8.5	8.3	9.5	11.8	12.3	12.7	12.2	11.9	10.6	11.4	17.6	9.8	7.9
N	1693	1917	1899	1024	2101	2123	1130	2157	2193	2031	2013	2098	2102	2133	1982	2024	3976	3052	3042	3032	2964	1025	963	957
Score on index	-23.6	-39.2	-33.7	-28.4	-38.2	-35.3	-37.4	-51.0	-49.4	-38.5	-46.2	-34.5	-35.7	-29.6	-22.6	-17.6	-16.7	-15.4	-16.8	-17.3	-14.2	-5.7	-19.4	-29.6
Britain																								
Materialist			30.8	36.3	43.5	32.7	24.5	36.1	31.7	23.2	25.6	25.8	26.2	23.0	20.0	21.1	18.4	23.2	22.5	23.1	24.7	19.5	21.9	23.2
Mixed			61.4	56.0	52.1	59.3	63.3	54.6	60.1	63.0	61.9	57.7	59.3	63.5	64.2	59.3	62.5	59.1	60.1	60.0	61.1	64.8	62.3	62.5
Postmaterialist			7.8	7.7	4.4	7.9	12.2	9.3	8.1	13.8	12.5	16.6	14.5	13.5	15.8	19.6	19.1	17.7	17.4	16.9	14.2	15.7	15.8	14.3
N			1916	1272	2610	2620	1338	2735	2602	2441	2464	2578	2632	2540	2452	2501	4840	3475	3724	3712	3728	1254	1242	1220
Score on index			-23.0	-28.6	-39.2	-24.8	-12.3	-26.8	-23.6	-9.4	-13.1	-9.2	-11.7	-9.5	-4.2	-1.5	0.7	-5.4	-5.2	-6.3	-10.6	-3.8	-6.1	-8.9

Source: Eurobarometer Trend File.

* It has been applied the "wnation" weighting factor to the "nation2" variable. However. the number of cases is the actual number of respondents who received a score on the value index.

** Percentage of postmaterialist minus percentage of materialists.

Table 3.2 Percentage of Postmaterialists minus Percentage of Materialists in Each Cohort in a Combined Sample of Six European Countries, 1970-99.

	1970	1973	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1997	1999
Until 1905	-52	-53	-50	-45	-45	-46	-54	-50	-44	-44	-31	-33	-33	-31	-24	-30	-41	-37	-19	-36	-18	0	-25
1906-1915	-44	-43	-46	-51	-45	-39	-51	-53	-44	-41	-41	-40	-40	-36	-34	-30	-32	-36	-38	-43	-37	-28	-26
1916-1925	-31	-35	-36	-44	-35	-30	-41	-46	-40	-33	-29	-34	-34	-31	-26	-21	-26	-29	-34	-34	-29	-21	-38
1926-1935	-28	-31	-34	-38	-30	-35	-41	-42	-34	-33	-25	-30	-30	-28	-19	-14	-22	-21	-26	-25	-25	-27	-31
1936-1945	-19	-24	-25	-31	-25	-21	-38	-35	-24	-27	-18	-18	-18	-14	-7	-7	-8	-15	-16	-17	-16	-15	-13
1946-1954	4	-8	-13	-23	-9	-13	-28	-27	-13	-16	-11	-11	-11	-8	0	3	-2	-1	-9	-10	-4	-7	-12
1955-1964		-1	-2	-12	-3	-3	-15	-19	-5	-6	-6	-3	-3	-1	10	8	3	3	0	-5	-1	-2	-8
1965-1974							-16	-25	-2	-2	-3	1	1	1	12	11	9	7	2	0	9	-4	-5
From 1975																	-2	10	4	3	3	6	1

Source: Eurobarometer Trend File.

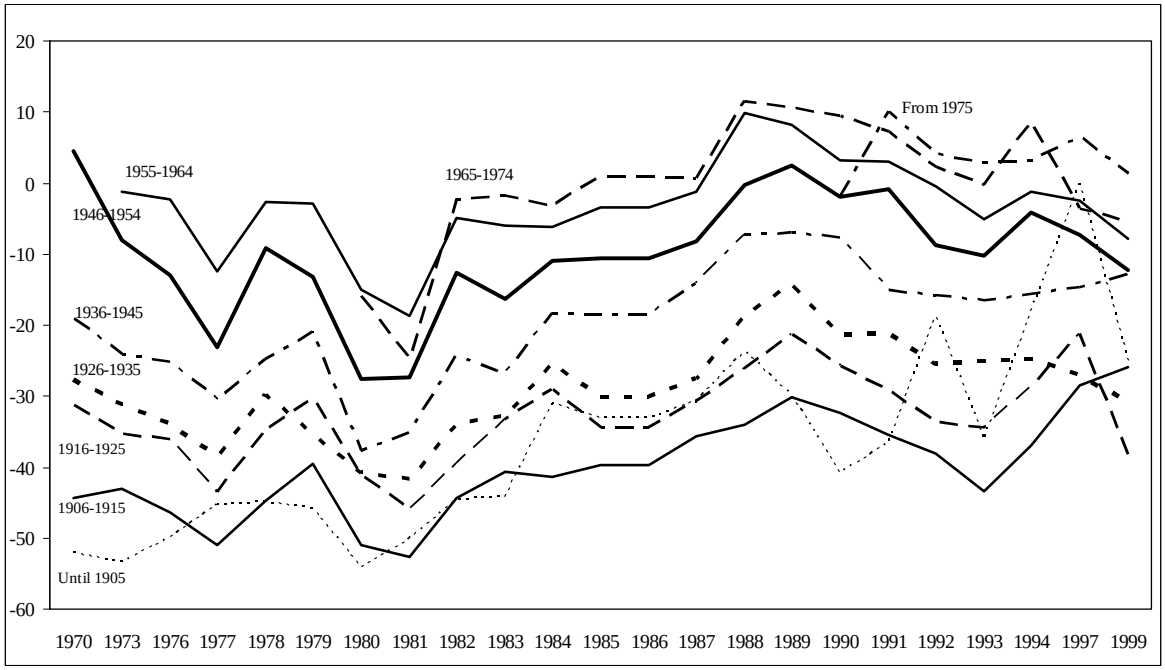
Table 3.3 Percentage of the Population in Each Cohort in a Combined Sample of Six European Countries, 1970-99.

	1970	1973	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1997	1999
Until 1905	17	10	8	7	6	5	5	4	3	3	2	2	2	1	1	1	1	0	0	0	0	0	0
1906-1915	15	18	14	15	14	14	14	13	12	11	11	9	8	7	6	5	5	4	3	3	3	1	1
1916-1925	14	13	13	13	13	13	12	13	13	13	12	14	13	13	13	13	11	11	10	10	9	6	6
1926-1935	18	16	16	16	16	16	15	14	14	14	13	14	13	14	14	14	15	14	14	14	13	13	13
1936-1945	18	18	17	18	17	17	16	16	16	16	16	14	15	15	15	15	15	15	15	15	14	16	14
1946-1954	18	17	17	17	17	16	17	17	17	17	17	16	16	16	15	15	15	15	14	15	15	14	14
1955-1964		7	13	15	17	19	20	20	19	19	18	20	19	19	18	18	18	17	18	17	17	19	17
1965-1974							1	3	6	8	11	12	14	16	18	20	20	20	20	20	19	20	20
From 1975																	1	3	5	7	9	12	15

Source: Eurobarometer Trend File.

Figure 3.1 represents graphically the evolution of each generation's PDI score over the thirty year period that goes from 1970 to 1999. We can observe clear and monotonic generational differences confirming the cohort effects predicted by the theory: the younger the generation the higher the level of postmaterialism. And these cohort differences remain quite constant over time. The figure also indicates a certain trend by which each cohort shows increasing levels of postmaterialist values over time, after the traumatic period of economic crisis of the seventies and the beginning of the eighties. Therefore, the final picture seems one in which there are constant generational differences coexisting with intra-cohort change.

Figure 3.1 Percentages of Postmaterialists minus Percentage of Materialists in a Combined Sample of Six West European Countries across Generations, 1970-99.



Source: Eurobarometer surveys.

From a simple visual observation of Figure 3.1 it would be plausible to discard the stricter version of the institutional model of learning applied to postmaterialist values. Generational differences do not disappear as a result of the homogenising effect of the period. And a similar conclusion would be appropriate to the purest version of the cultural model of learning: it is quite likely that the observed intra-cohort change would not be attributable only to sampling error. Therefore, the lifetime learning model begins to win support. Cohort effects seem to define the starting point of each generation and

create a constant gap between those generations over the period of observations. However, generations are not immune to the changing context. They experience transformations to adapt to the new circumstances.

After this preliminary analysis, I want to define more precisely the contribution of cohort effects by means of generational replacement to the overall change in values in comparison to intra-cohort value change. To do so, I follow Abramson-Inglehart's procedure that can be accounted in a series of articles (1986, 1987 and 1992). The method consists in the creation of a counterfactual society. They algebraically generate a series of postmaterialist values of a hypothetical population in which no generational replacement takes place. This series is used as a baseline for comparison with the actual population which follows the normal demographic replacement rules. The procedure used to create this simulated society without cohort replacement is to remove new generations from the calculation. Then, the cohorts in the first set of observations (1970) are considered to be immortals, and their members remain constant over the whole time-period (1970-1999). In the following surveys, the postmaterialist index in each cohort is then multiplied by the number of surveyed people that originally constituted that cohort in 1970. We sum up these products and divide them by the total number of cases. Following this procedure it is possible to obtain an artificial population in which the effect of generational replacement has been removed. This counterfactual case can then be compared with the actual values of the population. The difference between the results of the actual series and the simulated ones accounts for the effect of generational replacement. According to Abramson and Inglehart (1986), this is an important task since replacement is a major force promoting value change.

I introduce some adjustments into the original procedure, as I am analysing a wider time series. Older cohort groups are affected by mortality during the period of observations (see Table 3.3) and this can alter the aggregate results of the series without generational replacement in two directions. Sampling error will be higher in these groups because they will decrease in number, and differential mortality rates will introduce bias by overrepresenting postmaterialist individuals (as they have higher social status and usually live longer). Therefore, I define four different versions of postmaterialism without cohort replacement, removing generations from the calculation when they constitute less than a certain percentage among the overall population. Then I verify

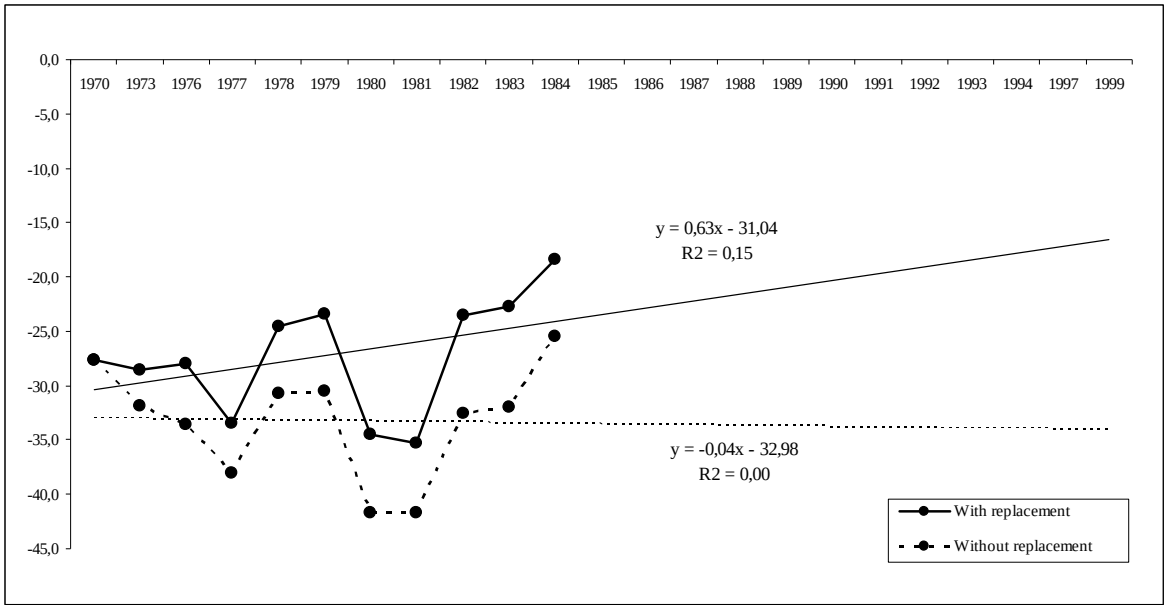
whether the series of postmaterialism with generational replacement and its counterfactuals are stationary or do follow some kind of trend. I try to adjust models that fit those series. I analyze one exogenous variable which is thought to influence postmaterialist values. And finally I define a set of regression models with lagged dependent variables to explain the evolution of postmaterialist values with and without cohort replacement.

The Counterfactual Procedure

Figure 3.2 presents the first time series that Abramson and Inglehart (1986) analysed using their counterfactual procedure[24]. The period of observations ranges from 1970 to 1984. The solid line indicates the series with generational replacement, and the dotted line the series without replacement. The two lines start from the same point in 1970, but they separate from each other when new cohorts enter the series with replacement pushing it upwards. Both lines seemed to suffer in a similar way the ups and downs created by the troublesome economic situation and high inflation rates of that epoch. However at the end of the period, we can appreciate an overall increase in the level of postmaterialism in the series with cohort replacement. This is particularly relevant if we compare it to its counterfactual without generational replacement that presents no improvement in its aggregate level.

[24] The PDI scores presented in most of the figures show negative numbers (PDI ranges from -100 to 100). This is why the values of the index appear under the horizontal axis from now on.

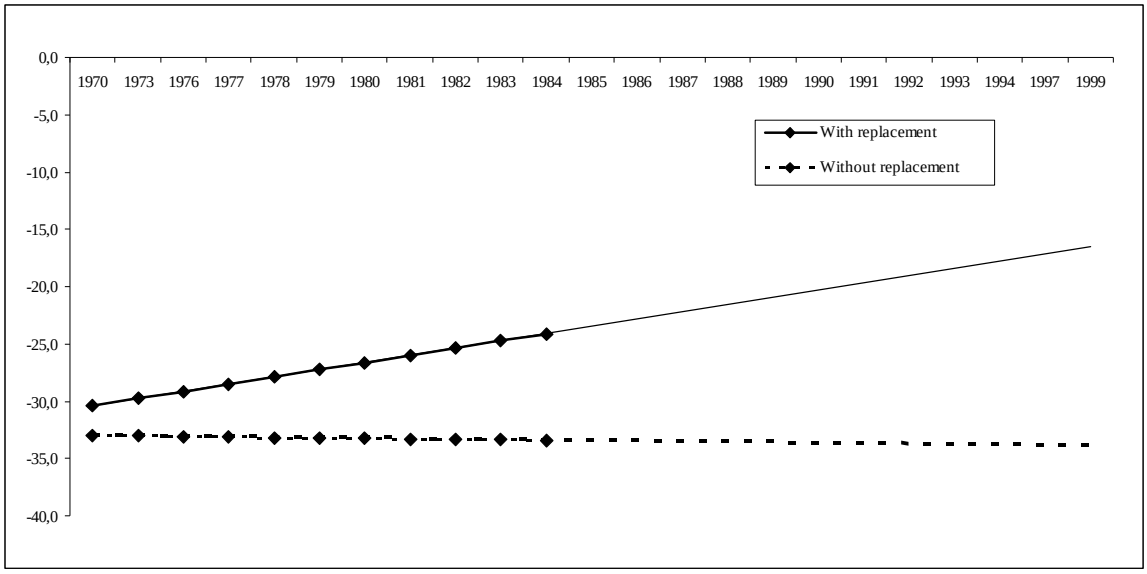
Figure 3.2 Percentage of Postmaterialists minus Percentage of Materialists in a Combined Sample of Six West European Countries, 1970-84.



If we apply a simple OLS regression model with a deterministic trend to both series in order to explore their potential increase over time, we can confirm the differences commented earlier. The passage of time explains 15% of the variance in the series with replacement, and the percentage of postmaterialists increases by 0.63 every year. In contrast, no signs of trend appear in the series without replacement, but local level oscillations. Figure 3.3 shows a graphical representation of those regression models.

According to these data, Abramson and Inglehart concluded that generational replacement played a major role in the final growth of postmaterialist values during this period. They argued that even in a period of economic crisis generational replacement would push postmaterialist values upwards, as it represents the major force of value change. However, this period of observations, precisely because of its exceptionality, would not be the best one to test generational replacement against period effects.

Figure 3.3 Percentage of Postmaterialists minus Percentage of Materialists Predicted by the Model with Replacement and the Model without Replacement, 1970-84.



If we expand the observations to cover the period between 1970 and 1999 we find a much more different picture. Across these six Western European countries there has been a considerable amount of change in materialist/postmaterialist values. In 1970 the PDI score was -27.6 points, a situation in which materialist individuals clearly outnumbered postmaterialist ones. Thirty years later, the index reached the value of -12.3, indicating a reduction in the number of materialist individuals and a growth of postmaterialists. In general terms, the level of postmaterialism has clearly increased. The question is whether this change is attributable almost entirely to generational replacement, or if the increasing economic security experienced by all cohorts over this period of time has something to do.

As said earlier, I do not reproduce exactly Abramson-Inglehart's procedure as I am taking into account a longer period of observations and this will have consequences in older cohorts. These generations would have diminished in number and their scores in the value scale would be affected. It is documented (1987) that differential death rates can lead to problems in tracking cohorts when they reach old age since postmaterialists (who have higher levels of education and income) tend to live longer than materialists. As their social composition changes, older cohorts can become more postmaterialist. There are also problems regarding sampling error if subsamples are too small. To correct for these factors I introduce some adjustments into the original procedure. I establish four different versions of postmaterialism without cohort replacement,

removing generations from the calculation when they reach less than a certain percentage among the total population. The first series without replacement ‘type a’ or ‘PDI_a’, is the most implausible of all. It treats all generations as if they were immortals no matter how scarce they are. This clearly overstates older and less representative cohorts. The following versions of postmaterialism without replacement try to correct by the real weight of generation groups when they reach lower quantities. Postmaterialism without replacement ‘type b’ removes cohorts which represent less than 2% in the overall sample of that year. Being that a generous criterion, series without replacement ‘type c’ drops generations under 5%, and series without replacement ‘type d’ under 10%.

A Descriptive Time-Series Analysis

First of all, I want to test whether any of the series is stationary, especially the counterfactuals without generational replacement. If that was the case, the capacity of adult learning in the field of values would be in question. Table 3.4 provides the results of the Augmented Dickey-Fuller test. The null hypothesis is that the series have a unit root and are stationary in levels. None of them appear to be stationary, not even the most illusory one –without generational replacement ‘type a’. How can we describe then the evolution of those series over the period of observations? Figure 3.4 represents graphically the series of postmaterialist values with generational replacement (the solid line) and the several versions of postmaterialism without replacement (the dotted lines). It seems quite clear that the original series Abramson and Inglehart (1986) studied were anomalous with respect to the rest of the period. After 1981 there is a trend in all series towards increasing levels of postmaterialist values. Moreover, all series without generational replacement progress quite similarly to the real series with replacement. This means that once we discount the undoubted effect of generational replacement, postmaterialist values continue to grow. There seems to be a significant amount of change due to intra-cohort adaptation to the context. If the exogenous variables defining this context are following a trend, so does postmaterialism. And even the less realistic counterfactual (without replacement ‘type a’) seems to evolve in parallel to the actual series.

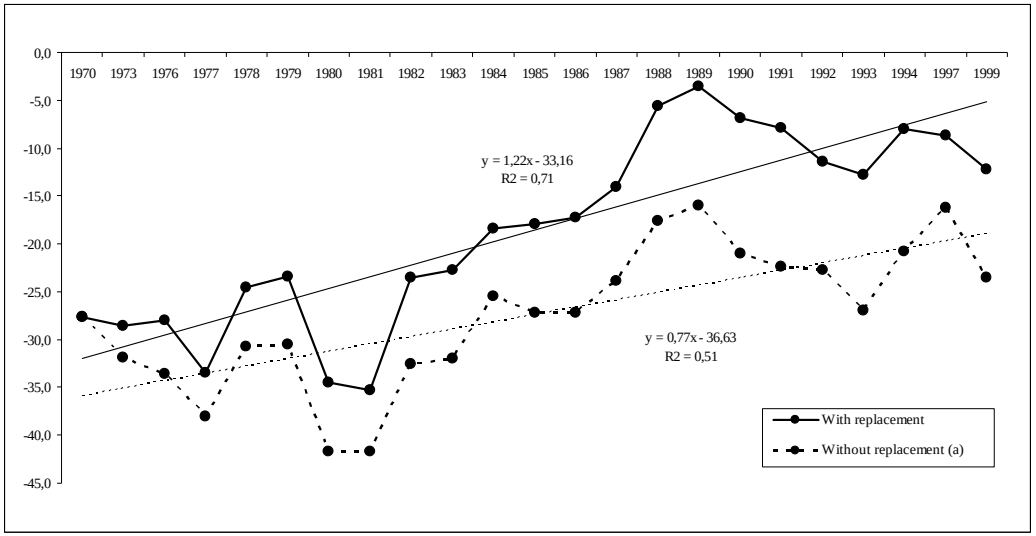
Table 3.4 Results of the Augmented Dickey-Fuller test statistic of the PDI series, 1970-84.

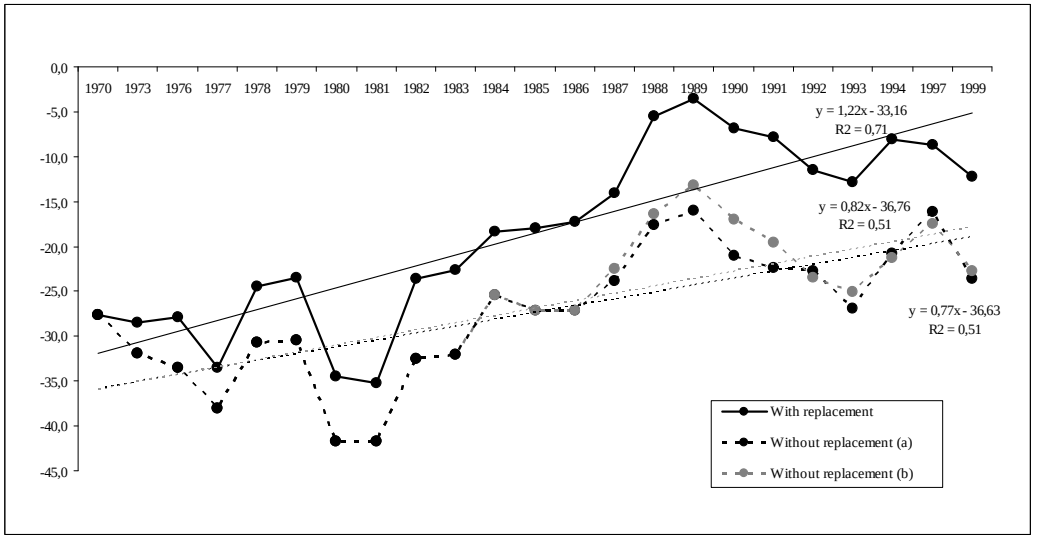
	t	Prob.*
with replacement	-1.252176	0.6376
without replacement (a)	-1.573679	0.4829
without replacement (b)	-1.437416	0.5502
without replacement (c)	-1.371625	0.5821
without replacement (d)	-1.369563	0.5831

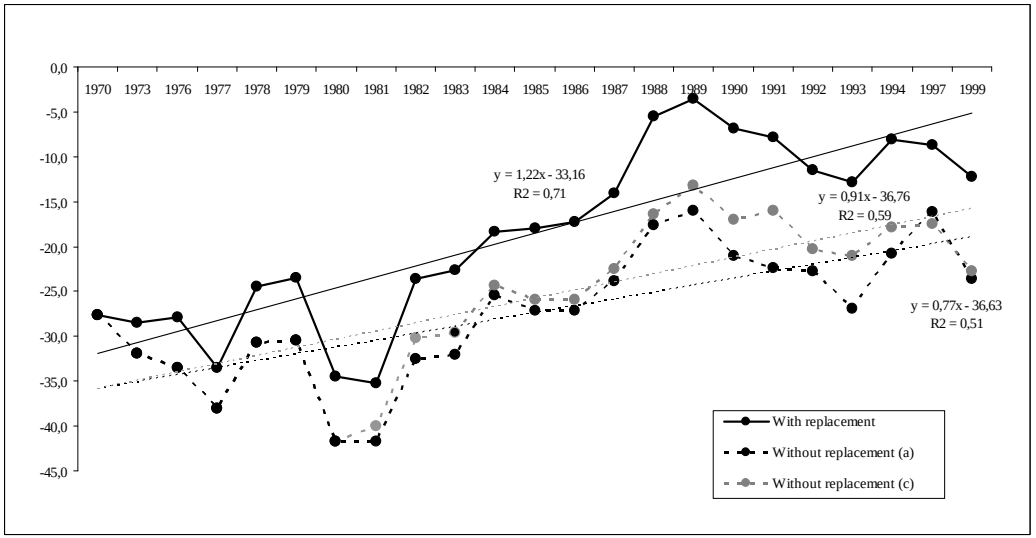
Null Hypothesis: the variable has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic based on SIC, MAXLAG=8)
*MacKinnon (1996) one-sided p-values.

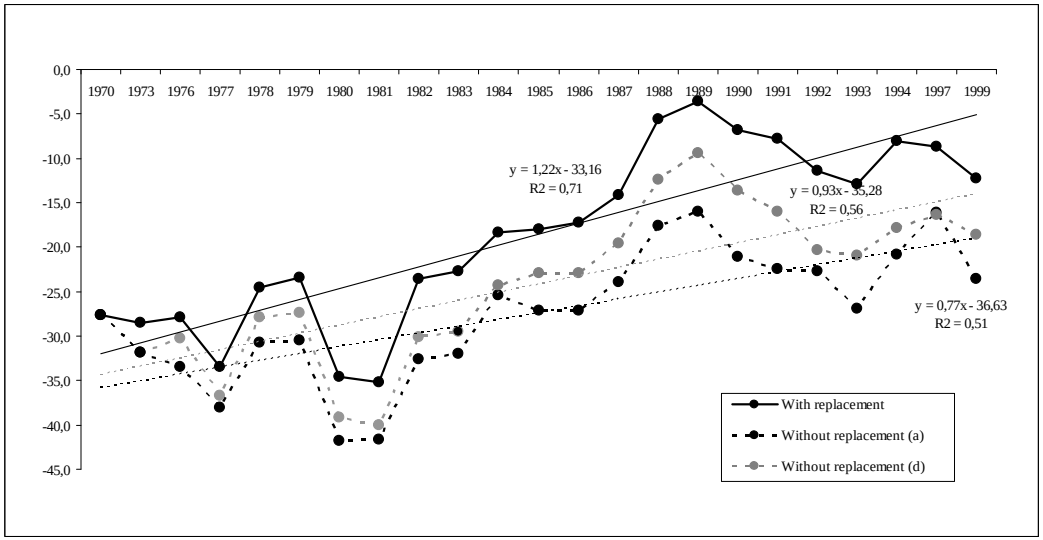
My second purpose is to define OLS regression models that best describe the series of postmaterialism, and therefore I perform a set of trials. The first of these trials considers all of the series to be predicted just by a deterministic trend (and an intercept). Although these are imperfect models as the residuals appear to be autocorrelated and Durbin-Watson statistics indicates serial correlation, they are quite helpful as a first approach. Figure 3.4 include the equations of these models. In all cases the trend has as strong and relevant impact. However the slope of the models without generational replacement is less steep than that of the series with replacement. This means that the gap between the two will increase with time. Postmaterialism with generational replacement grows at a speed of 1.22 points per year, while counterfactual ‘type a’ does it at 0.77, ‘type b’ at 0.82, ‘type c’ at 0.91, and ‘type d’ at 0.93. The series without cohort replacement that have removed older generations resemble much more to the actual series with replacement. This fact can also be asserted by looking at the R-squared values. All that can not erode the fact that both postmaterialism with replacement and all its counterfactuals evolve quite similarly, as if they were cointegers and had a common exogenous factor.

Figure 3.4 Percentage of Postmaterialists minus Percentage of Materialists Predicted by the Model with Replacement (1) and the Models without Replacement (2a, 2b, 2c, 2d), 1970-99.









I use these OLS regression models to estimate the effect of the period against that of cohort replacement. I set the expected values of the counterfactual models without generational replacement (models 2a, 2b, 2c and 2d) as a baseline for comparison against the model with generational replacement to see how they differ. Table 3.5 presents those expected values and Figure 3.5 shows its visual representation.

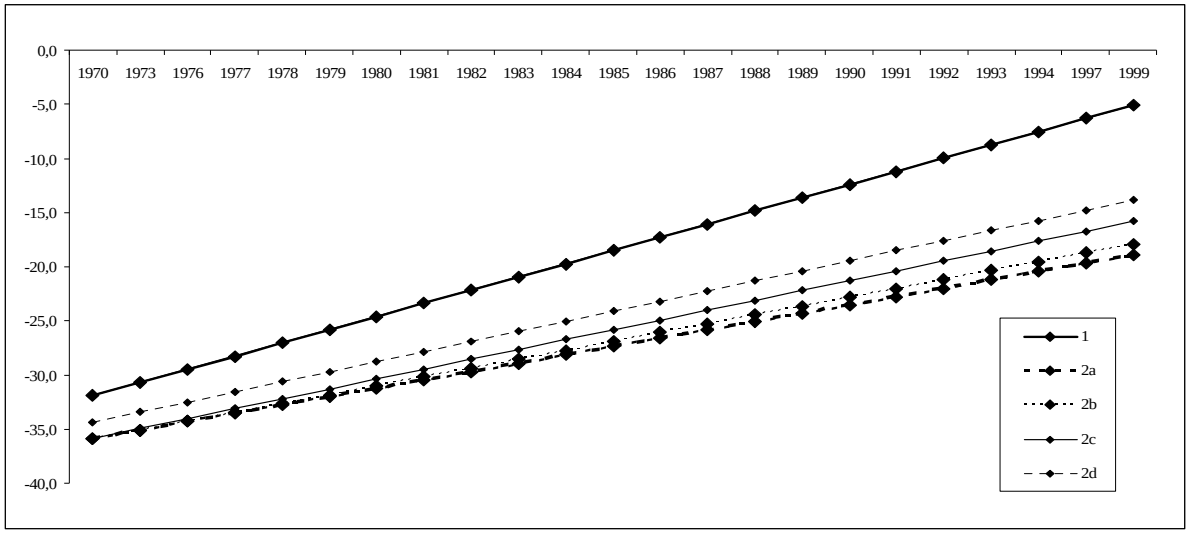
Table 3.5 PDI Scores Predicted by the Models with and without Replacement, 1970-99.

	Model 1 with repl.	**Model 2a** without repl.	**Model 2b** without repl.	**Model 2c** without repl.	**Model 2d** without repl.
1970	-31.9	-35.9	-35.9	-35.9	-34.4
1973	-30.7	-35.1	-35.1	-34.9	-33.4
1976	-29.5	-34.3	-34.3	-34.0	-32.5
1977	-28.3	-33.6	-33.5	-33.1	-31.6
1978	-27.1	-32.8	-32.7	-32.2	-30.6
1979	-25.8	-32.0	-31.8	-31.3	-29.7
1980	-24.6	-31.2	-31.0	-30.4	-28.8
1981	-23.4	-30.5	-30.2	-29.5	-27.8
1982	-22.2	-29.7	-29.4	-28.6	-26.9
1983	-21.0	-28.9	-28.6	-27.7	-26.0
1984	-19.7	-28.2	-27.7	-26.8	-25.1
1985	-18.5	-27.4	-26.9	-25.8	-24.1
1986	-17.3	-26.6	-26.1	-24.9	-23.2
1987	-16.1	-25.9	-25.3	-24.0	-22.3
1988	-14.9	-25.1	-24.5	-23.1	-21.3
1989	-13.6	-24.3	-23.6	-22.2	-20.4
1990	-12.4	-23.5	-22.8	-21.3	-19.5
1991	-11.2	-22.8	-22.0	-20.4	-18.5
1992	-10.0	-22.0	-21.2	-19.5	-17.6
1993	-8.8	-21.2	-20.4	-18.6	-16.7
1994	-7.5	-20.5	-19.5	-17.7	-15.8
1997	-6.3	-19.7	-18.7	-16.7	-14.8
1999	-5.1	-18.9	-17.9	-15.8	-13.9
Diff. (1999-70)	26.8	16.9	18.0	20.0	20.5
Within-cohort change		63.1%	67.2%	74.6%	76.2%

To see how each series changes over the period of observations, we can subtract the predicted value at the end of the series from that at the beginning. In the model with generational replacement (model 1) we can observe an increase in the level of postmaterialism of 26.8 points. The growth in the levels of the counterfactual series is not as intense as in the actual one, but is remarkable anyway. It is almost a 17 points

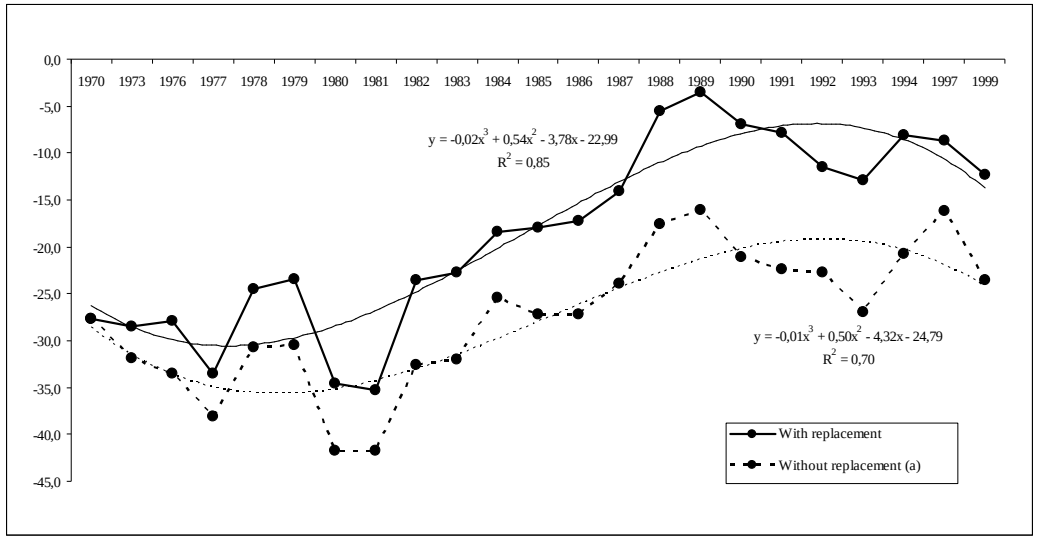
increase in counterfactual 'type a', 18 in 'type b', 20 in 'type c' and 20.5 in 'type d'. We can consider the increase in the series with replacement as being the total possible increase in postmaterialism, including both the effect of generational replacement and the change due to period effects (intra-cohort learning). Every counterfactual's growth over the period of observations should be a pure consequence of intra-cohort learning, as no new and more postmaterialist generations are included in the calculation. Then, the ratio between the growth of the counterfactual and that of the actual series could be considered the net effect of intra-cohort change with respect to the total change produced during the period of observations. If we make the calculation, we can tell that between 1970 and 1999 the growth in postmaterialist levels caused by intra-cohort change is higher than that due to generational replacement. We can estimate intra-cohort change as ranging between 63.1% in counterfactual 'type a' and 76.2% in 'type d'. The effect of generational replacement is the difference with respect to 100.

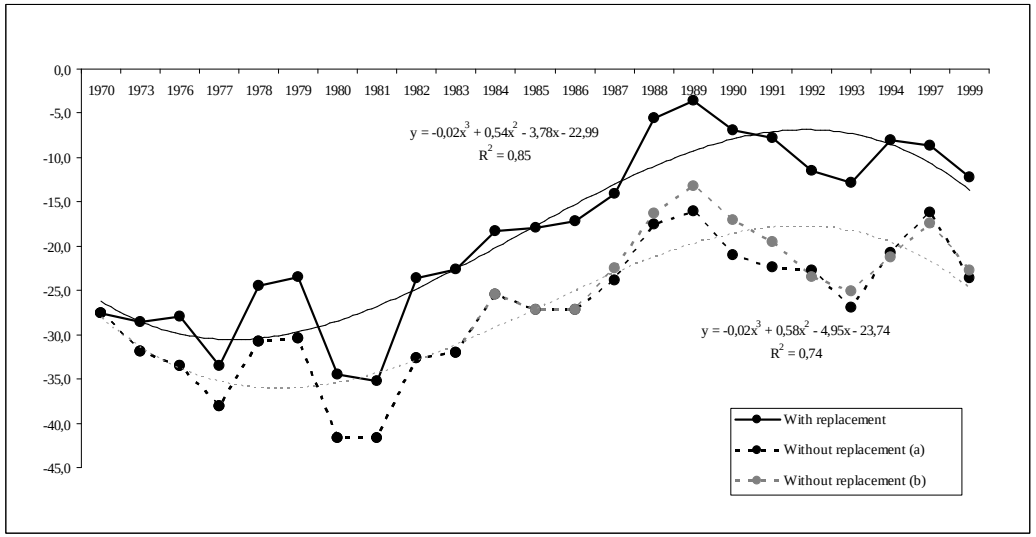
Figure 3.5 Predicted PDI Scores for the Model with Replacement (1) and the Models without Replacement (2a, 2b, 2c, 2d), 1970-99.

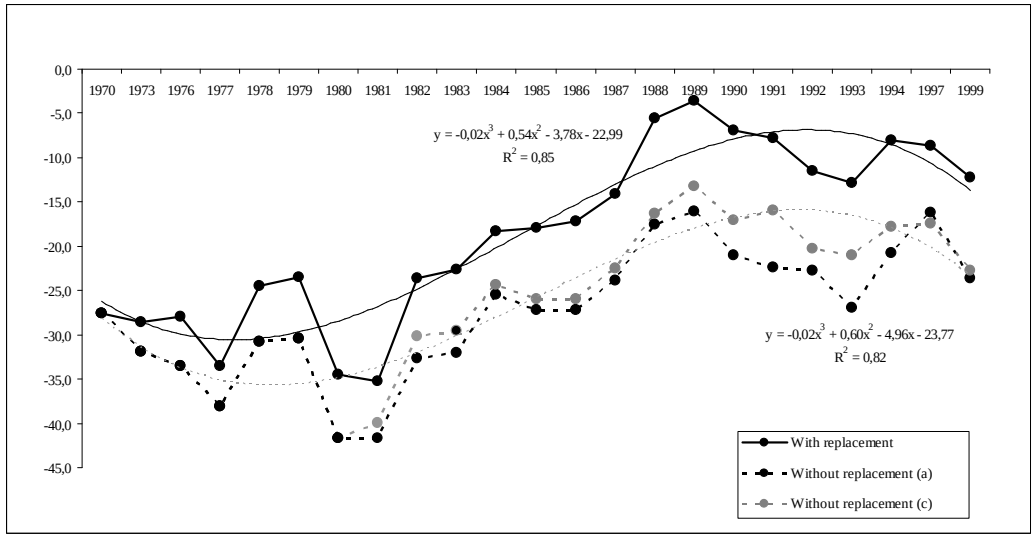


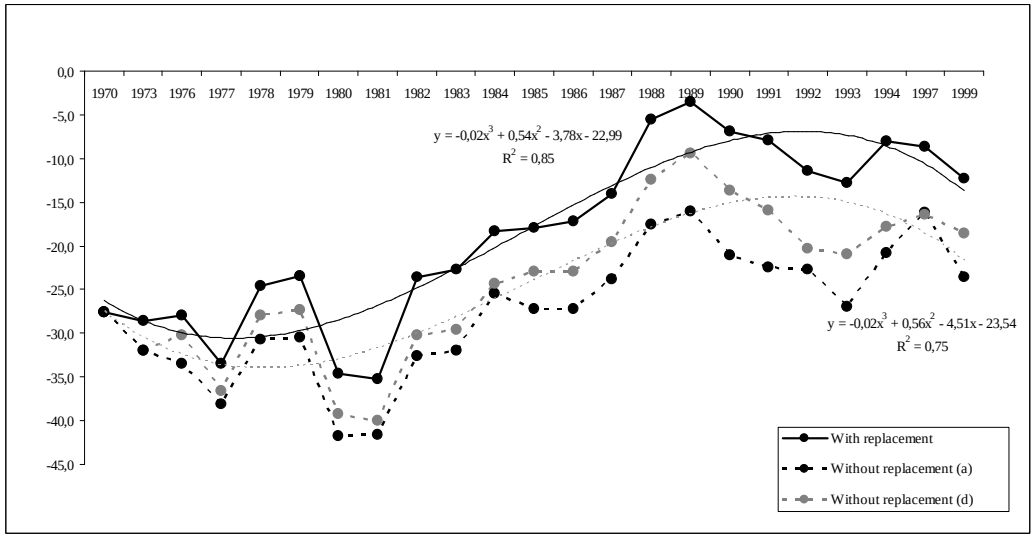
I do not want to say that generational replacement is less important than intra-cohort change. These evidences just imply that during this period of observations the growth due to intra-cohort change was higher than that caused by generational replacement. Cohort replacement has a slower effect, but anyway steady and deep. As generational differences do not disappear but remain constant, in the long run cohort replacement would continue to be a stable source of value change. However, the large increase in postmaterialist values experienced across these six European countries between 1970 and 1999 is mainly attributable to intra-cohort change.

Figure 3.6 Percentage of Postmaterialists minus Percentage of Materialists Predicted by the Model with Replacement (1) and the Models without Replacement (2a, 2b, 2c, 2d), 1970-99.









Next, I continue to make trials to find a better model to describe the series of postmaterialism. Then I introduce the trend as a third degree polynomial to better capture the pattern of the series. This trial can be seen in Figure 3.6. It improves considerably the fitness and the residual autocorrelation, but serial correlation only disappears clearly in the case of postmaterialism without replacement 'type c'. However the series are also affected by abrupt changes in levels. Therefore I introduced these changes in levels as time-related dummy variables together with the trend. This improves considerably the previous models achieving residual stationarity as measured by ADF tests. The OLS models are defined in the following way:

The first model 1 (postmaterialism with generational replacement) can be established as:

(1) $$postmat = \alpha + \beta \cdot T + \delta_1 D1 + \delta_2 D2 + \delta_4 D4 + \delta_5 D5 + u_t$$

where α is the constant term, β is the regression coefficient of *T* which is the time trend, and δ_n are the different coefficients of each dummy time related variables (*D1, D2, D4* and *D5*) and u_t is the error term. Equivalent models are defined for the counterfactuals without generational (model 2a, 2b, 2c, 2d):

(2) $$postmat\_a = \alpha + \beta \cdot T + \delta_1 D1 + \delta_2 D2 + \delta_4 D4 + u_t$$

(3) $$postmat\_b = \alpha + \beta \cdot T + \delta_1 D1 + \delta_2 D2 + \delta_4 D4 + u_t$$

(4) $$postmat\_c = \alpha + \beta \cdot T + \delta_1 D1 + \delta_2 D2 + \delta_4 D4 + \delta_5 D5 + u_t$$

(5) $$postmat\_d = \alpha + \beta \cdot T + \delta_1 D1 + \delta_2 D2 + \delta_4 D4 + u_t$$

Table 3.6 presents the estimation outputs of these models. R-squares are higher than in all previous models. A graphical representation of these models is presented in Figures 3.7 and 3.8. At the bottom of those figures a plot of the residuals is included in which it is possible to appreciate their stationarity. The results of the ADF tests showing residual stationarity are presented in Table 3.7.

Table 3.6 Descriptive OLS Regression Models to Explain the Evolution of Postmaterialism with and without Replacement, 1970-99.

	Model 1	**Model 2a**	**Model 2b**	**Model 2c**	**Model 2d**
	B	B	B	B	B
C	**-31.38****	**-33.63****	**-33.54****	**-33.88****	**-32.49****
	(0.785)	(1.204)	(1.089)	(0.963)	(0.915)
T	**0.818****	**0.452****	**0.444****	**0.546****	**0.527****
	(0.046)	(0.066)	(0.061)	(0.056)	(0.051)
D1	**-8.626****	**-8.069***	**-8.100****	**-8.570****	**-8.364****
	(2.015)	(3.139)	(2.839)	(2.473)	(2.385)
D2	**-12.93****	**-13.26****	**-13.27****	**-13.25****	**-13.18****
	(1.446)	(2.253)	(2.037)	(1.774)	(1.711)
D4	**8.642****	**5.097****	**7.885****	**7.030****	**8.818****
	(1.092)	(1.681)	(1.520)	(1.340)	(1.277)
D5	**-5.447***			-5.246	
	(2.111)			(2.591)	
R-squared	0.967	0.841	0.881	0.920	0.928
Adjusted R-squared	0.960	0.815	0.862	0.903	0.916
S.E. of regression	1.948	3.036	2.746	2.391	2.307
Sum squared resid	91.09	230.5	188.5	137.2	133.0
Log likelihood	-59.23	-73.15	-70.13	-65.37	-64.91
Durbin-Watson stat	1.261	1.059	1.037	1.034	0.998
Mean dependent var	-18.87	-27.10	-26.75	-25.82	-24.31
S.D. dependent var	9.761	7.060	7.397	7.678	7.985
Akaike info criterion	4.349	5.210	5.009	4.758	4.660
Schwarz criterion	4.629	5.444	5.243	5.038	4.894
F-statistic	140.8	32.95	46.37	55.02	80.56
Prob(F-statistic)	0.000	0.000	0.000	0.000	0.000

Note: Standard errors in parenthesis.
** p>0.01
* p>0.05

Table 3.7 Results of the Augmented Dickey-Fuller Test Statistic to the Residuals of Models 1, 2a, 2b, 2c and 2d, 1970-99.

	t	Prob.*
Model 1	-3.951747	0.0052
Model 2a	-3.593955	0.0123
Model 2b	-3.708720	0.0093
Model 2c	-4.204301	0.0027
Model 2d	-3.560808	0.0133

Null Hypothesis: the variable has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic based on SIC, MAXLAG=8)
*MacKinnon (1996) one-sided p-values.

Figure 3.7 Observed and Predicted Values of Model 1, and Plot of the Model Residuals.

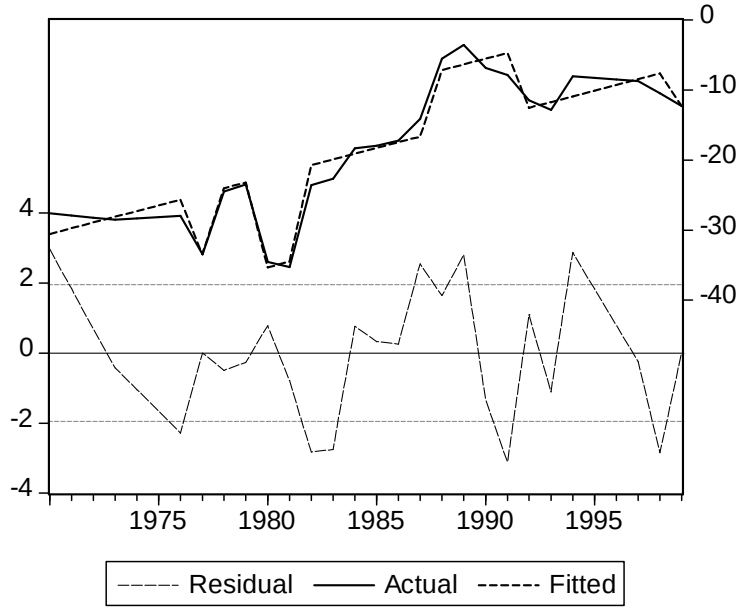
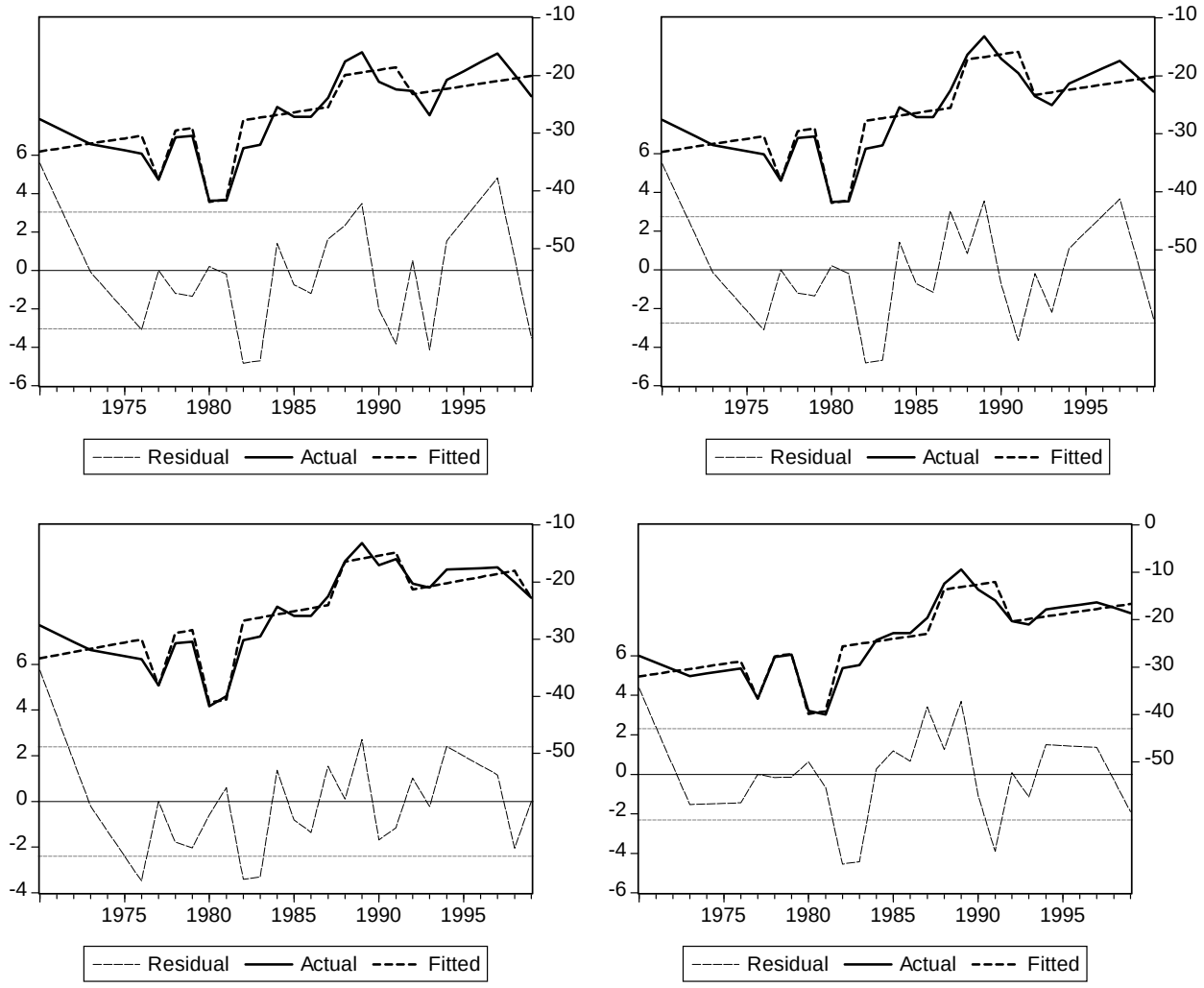


Figure 3.8 Observed and Predicted Values of Model 1, and Plot of the Residuals (2a, 2b, 2c, 2d).



Finally, I conclude that the evolution of postmaterialism with and without generational replacement can be defined as a function of a trend and sudden changes in levels. The next step is to analyse the exogenous factors which are affecting the dynamics of actual postmaterialism and its counterfactuals. It is possible to distinguish two kinds of references about those external influences in the literature. First, postmaterialism is treated as a function of economic security or material wellbeing of nations and individuals as a broad concept (Inglehart 1990, 1997). This is considered to be a long-term influence linked to the modernization process and generational replacement. The second is the idea of period effects as short-term influences on materialist/postmaterist values operationalized with indicators such as inflation or unemployment (Inglehart and Abramson 1994). The weakness of these last conceptualizations is that they appear seemingly unconnected. On one side we have various levels of economic prosperity creating differences between generations by means of the "impressionable years" model of learning, and on the other side short-term period effects influencing all cohorts over their lifetime. But what if both types of influences are basically the same but happening at different moments of an individual's life cycle? This broad concept of economic security could include at the same time long and short-term components. The difference between generation and period effects can blur if we think of economic security as influencing people's values with different intensity depending on their age. Following Bartels (2001), period and generation effects can be conceptualized as basically the same thing happening at different moments of people's lifetime. The younger the person is, the higher the impact of the context. However people always receive and process influences from the context. The task of testing these points is far too ambitious for this dissertation. But the part I can test is what happens when one of those exogenous variables considered a short-term period effect does have a trend and not just local level oscillations.

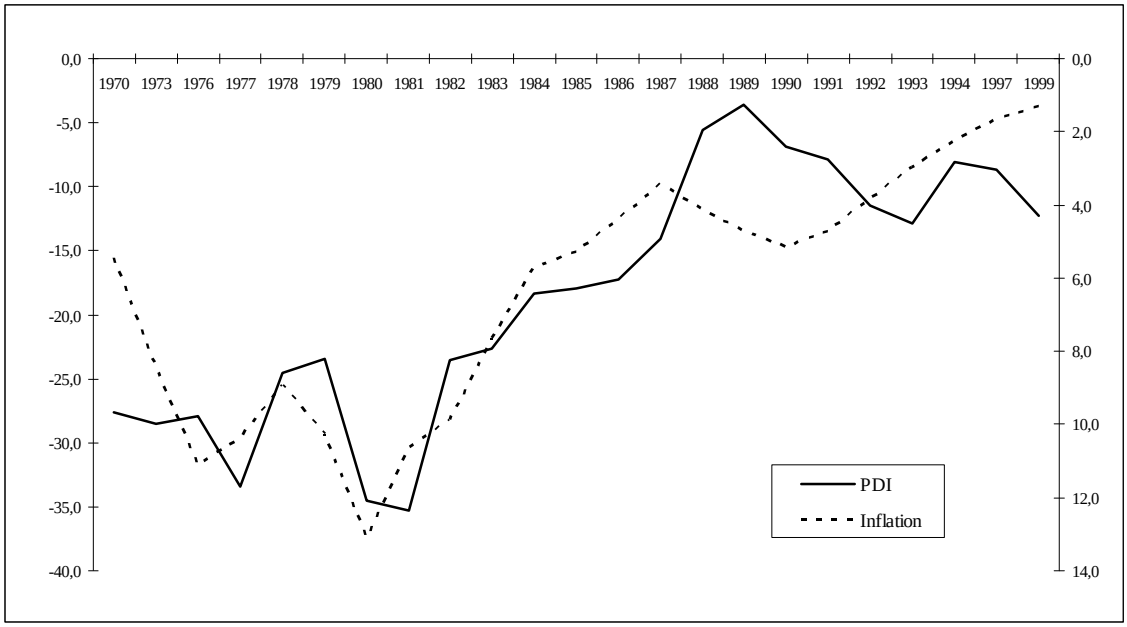
I will focus on analysing the effects of inflation on postmaterialist values with replacement and its counterfactuals without replacement. The opinion is quite unanimous about the clear impact that inflation rates have on postmaterialism. Quoting Abramson and Inglehart (1992): "[…] aggregate-level changes in responses to these items [the four items value scale] are strongly related to changes in the consumer price index. Though respondents are asked to choose long-term goals, they are more likely to select 'fighting rising prices' when inflation rates are rising. As has been shown in many

publications […], in all six countries there is a substantial correlation between annual changes in the consumer price index and changing scores in the value index". Abramson and Inglehart continue to say: "Indeed, even though there are year-to-year fluctuations, the overall distribution of values is continuously affected by generational replacement, and our goal in this article is to estimate that impact." But economic environment does not only provide short-term fluctuations in the form of local level oscillations, it can also bring a tendency apart from that coming from generational replacement.

A Multivariate Dynamic Model

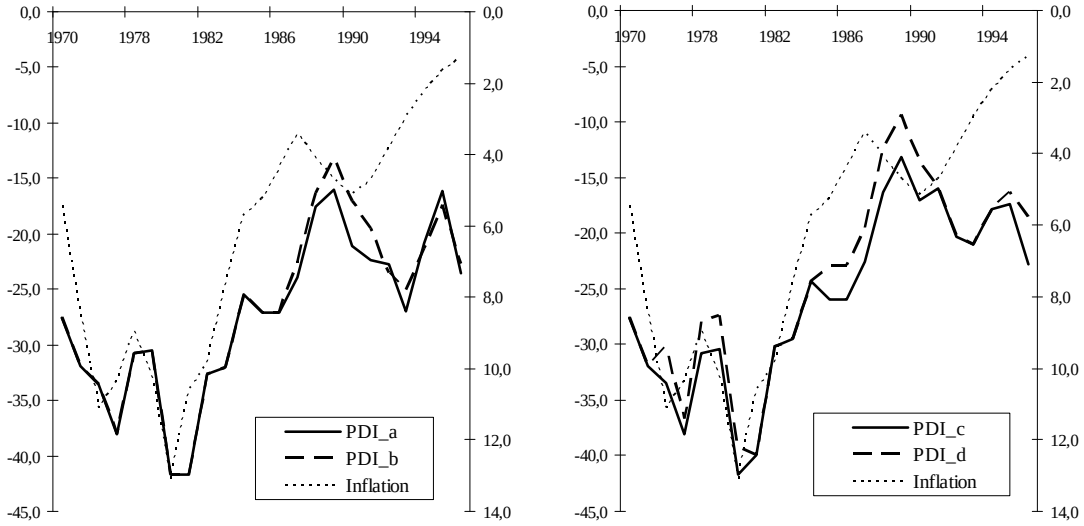
Now I want to explain the dynamic of postmaterialist values with and without cohort replacement by means of an exogenous factor, namely inflation rates. I am quite conscious that the real causes of the intra-cohort increase in the levels of postmaterialism across Western Europe should be seek in the overall economic welfare experienced over a large part of the thirty year period of time, and not just in the reduction of inflation rates alone. That welfare has been interrupted in some moments; however the trend has been one of an upward nature. Reduction of inflation rates is just part of the process, along with stable economic growth, increasing GDP per capita, and low unemployment rates, that created a more secure and prosperous environment in which postmaterialism not only grew as a consequence of generational replacement, but as a product of intra-cohort current context actualisation. Nevertheless, if we focus our attention on inflation rates provided by the OECD (and weighted by countries to match our combined sample), we can see that it covaries with postmaterialist values. Figure 3.9 shows the series of postmaterialism with replacement together with inflation rates. In Figure 3.10 we can observe a certain covariation with the counterfactuals series, though not as strong as in the actual time series. Moreover, it also seems that the counterfactual series carrying less old generations are more affected by inflation rates.

Figure 3.9 The Dynamics of PDI Scores with Replacement and Inflation Rates, 1970-99.



Source: Eurobarometer surveys and OECD statistics.

Figure 3.10 The Dynamics of PDI Scores without Replacement (a, b, c and d) and Inflation Rates, 1970-99.



Source: Eurobarometer surveys and OECD statistics.

From a visual analysis it is possible to assert a certain degree of covariance between postmaterialist values and inflation. Furthermore, theory tells that there is a substantive relationship between these two variables. However correlation does not prove causality.

To study causality it is necessary to establish statistical controls. This is because a third variable could be biasing the relationship between our dependent and independent variables. According to Hadenius and Teorell (2005), even in well-specified models there are other potential sources of bias, such as endogeneity and the presence of a causal lag. When working with repeated cross-section data instead of panel data, as it is the case, there are some limitations. The problem with endogeneity could be solved with a good theory about the studied phenomena. In our case, it is quite obvious that the causal link goes from inflation to postmaterialism and not the other way around. The causal lag refers to the time it takes the independent variable to affect the dependent variable. This can be controlled by lagging the independent variable. It is also possible to lag the dependent variable and include it as an independent variable. This will ensure that the effects of X on Y previous to the lag are controlled (Hadenius and Teorell 2005).

I want to know if inflation has a relevant statistical impact on the series of postmaterialism with generational replacement as well as in those without replacement. To test it statistically I define a set of OLS regression models (see Table 3.8), one with the series of postmaterialism with generational replacement as a dependent variable and the others with the different versions of the counterfactuals. Because of its nature, it is quite likely that inflation, a short-term factor, will have a higher contemporary effect on postmaterialism rather than a lagged one. I test this assumption with different versions of inflation with and without time lags, and prove it to be correct. Therefore, in the final models, I include as independent variables both inflation at present time (with no time lag), and the lagged dependent variable (with one time lag, *t*-1). Lagged dependent variables are often utilized as a means of capturing the dynamics of political attitudes (Keele and Kelly 2006). In these models, I made the level of postmaterialism at time *t* to be a function of postmaterialism at *t-1* as modified by new information about the inflation rate. The lagged dependent variable coefficient has a dynamic interpretation as it indicates the timing of the effect of inflation on postmaterialism. I previously realized that inflation has lagged effects on postmaterialism, so including the lagged dependent variable is a way to rule out these effects. I exclude the intercept as it does not have statistical significance. The lagged dependent variable procedure is also a manner to capture potentially relevant exogenous factors excluded from the model (Keele and Kelly 2006). This may also be the case, as I do not include enough indicators to reflect

the general level of economic security (such as GDP per capita, human development index, etc.).

Table 3.8 OLS Regression Models to Explain the Evolution of Postmaterialism with Replacement (Model 1) and without Replacement (Models 2a, 2b, 2c and 2d), 1970-99.

	Model 1		**Model 2a**		**Model 2b**		**Model 2c**		**Model 2d**	
	B	Beta	B	Beta	B	Beta	B	Beta	B	Beta
LDV (-1 lag)	**0.664****	0.679	**0.837****	0.840	**0.835****	0.840	**0.834****	0.839	**0.795****	0.803
	(0.106)		(0.071)		(0.069)		(0.076)		(0.081)	
Inflation	**-0.876****	-0.316	**-0.595***	-0.160	**-0.591***	-0.161	**-0.571***	-0.160	**-0.661***	-0.196
	(0.302)		(0.264)		(0.255)		(0.271)		(0.275)	
R-squared	0.855		0.708		0.752		0.773		0.772	
Adjusted R-squared	0.850		0.697		0.742		0.765		0.764	
S.E. of regression	3.797		3.952		3.820		3.789		3.934	
Sum squared resid	389.3		421.8		394.1		387.5		417.9	
Log likelihood	-78.81		-79.97		-78.98		-78.74		-79.83	
Mean dependent var	-18.57		-27.08		-26.72		-25.76		-24.19	
S.D. dependent var	9.791		7.184		7.526		7.807		8.098	
Akaike info criterion	5.573		5.653		5.585		5.568		5.644	
Schwarz criterion	5.667		5.747		5.679		5.663		5.738	
Durbin-Watson stat	1.762		1.840		1.693		1.805		1.784	

Note: Standard errors in parentheses.
** p>0.01
* p>0.05

From the results presented in Table 3.8, it seems that the inclusion of a lagged dependent variable in the models does not erode the effect of inflation. In all cases, contemporary inflation rates remain as a relevant predictor of contemporary postmaterialism. The results have another substantive interpretation: inflation has a stronger impact on postmaterialism with replacement than on the series without replacement. In other words, the effect of including young cohorts and removing older ones in the series increases the sensitivity to period effects. The different versions of postmaterialism without generational replacement are much more dependent upon its own past, which means they have more inertia. The closer to one the LDV coefficient is, the higher the inertia. However, in these series the level of postmaterialism continues to be affected by current inflation rates. Therefore, there is room for learning in the different moments of the life-cycle, though the propensity probably decays with age. That can be seen by comparing the relative effects of the LDV and inflation among the

four counterfactuals. The series without replacement containing higher amounts of old cohorts are more affected by inertia and less by inflation. Autocorrelation tests not shown prove the condition of stationarity in the residuals of these models[25].

Concluding Remarks

I have presented clear proofs indicating that materialist/postmaterialist values follow a lifetime model of learning, instead of a pure cultural or institutional one. These evidences have direct consequences for Inglehart's theory of value change. He fully relies on the assumptions of the culturalist approach and the "impressionable years" model, which believes that changes do not take place quickly but progressively through cohort replacement. In the analysis presented here, this paradigm has been shown to be insufficient to explain the evolution of postmaterialist values. It is true that intergenerational differences in values remained constant over the period of observations, but there is also a great deal of within-cohort change that has been neglected or misunderstood by the empirical literature. Formative experiences (as generation effects) establish the starting point for each cohort, and distinguish each generation from the rest over time. However existing cohorts are not immune to the changing characteristics of the context. They experience transformations to adjust to the changing contextual conditions. If external conditions are following a particular trend, the value associated would reflect it in a contemporaneous way and not just by means of generational replacement.

The type of analysis that has been performed here accounts for this dynamic view of value and attitude change. It implies an improvement with respect to the one originally proposed by Abramson and Inglehart, which is unable to explain current developments in postmaterialist values. Their counterfactual procedure to study value change was based on the natural replacement of cohorts in society. The underlying assumption was that postmaterialist values were age-stable. I have reproduced their method considering a wider time period of observations and demonstrated their assumptions to be wrong. I use their method as a benchmark to test the amount of change that has not been

[25] The OLS estimator produces biased but consistent estimates when used with a lagged dependent variable if there is no residual autocorrelation in the data-generating process (Keele and Kelly 2006).

produced by cohort replacement. Replacement happens to account only for a fraction of the huge overall change in the levels of postmaterialism over time. The biggest share comes from within-cohort adjustments: generations changing their values to adapt to contemporary political and economic experiences. This is corroborated by descriptively exploring the evolution of the series with and without cohort replacement. Both can be modeled the same way, meaning that they evolve similarly: with a time trend and sudden changes in levels coming from period shocks. In fact, period effects can have the shape of sudden shocks but also of consistent trends. Furthermore, I have demonstrated that the series with and without cohort replacement can be predicted by the same exogenous factors. To do so, I built a parsimonious dynamic model with just a lagged dependent variable and current inflation rates as regressors.

As the dynamic model has shown, even in the case of a value like postmaterialism, there is still room for change and adjustment after the period of late adolescence and early youth. This is a major implication of this analysis, given the fact that the "impressionable years" model is usually taken for granted, especially in the field of political culture studies. The results of this analysis are useful to warn about the perils of an acritical acceptance of the cultural model. Values are supposed to be amongst the most age-stable sociopsychological features and deeply rooted in individual's mind. But even values can change within a person's lifetime. People do not lose their capacity to change after the formative years, still in the realm of values. And this means good news in many respects. When new socio-political situations emerge, like transitions to democracy, it is quite likely that the time needed for the population to adapt would be shorter than predicted by the traditional culturalist approach, as values and attitudes would be more malleable than expected. This argument has also a negative implication: if bad new conditions should come out, the line of progress could be reversed.

Another consideration derived from this research is related to the very nature of period effects. Inglehart's understanding of them coincides with a very common point of view in the political culture literature, which is biased in favor of generation effects. Period and generation are seen as substantially different concepts. Period effects are conceived as random shocks: sudden changes in levels without any particular trend. They are not supposed to affect the dynamics of cohort replacement and generational differences in the long run. However, as I have argued here, period effects can have both the shape of

random shocks and consistent trends. Moreover, this is not the only relevant matter: period effects are basically the same as cohort effects, but happening at different stages of the life cycle. Experiences of adolescence and early adulthood leave a lasting imprint in peoples mind, but individuals continue to receive impacts from the context during the rest of their lifetime. Period effects during the formative years are called generation effects, and for the rest of the life cycle they are named period effects. However, generation and period effects are basically the same in essence. When we observe intergenerational differences in a particular value or attitude, we are in fact observing the consequences of past period effects. If these intergenerational differences are monotonic, it would mean that past period effects had a trend, which could or could not have persisted until the present time. This idea of period and generation effects coincides with Bartels approach to the subject (2001). According to him, the generational cliché could be de-composed in period shocks with varying effects depending on age, as a proxy of information accumulation. In this way, the concept of generation could be adjusted to reflect the lifetime learning processes.

This research has used a particular indicator to measure postmaterialist values. As signaled by Clarke and Dutt (1991), indicators of postmaterialism could be affected by measurement problems of validity and reliability. To avoid criticisms regarding the indicator used to test my hypotheses and to expand the external validity of my findings, I have performed additional analyses. An alternative way to test the applicability of the lifetime learning model to values related with the modernization process could be studying different indicators of that process. Inglehart considers the decline in religious values and practices as well as the increasing relaxation of some moral norms as some of them (1990, 1997, 2005 with Welzel). By studying their dynamics, I could demonstrate that other attitudes and values linked to the modernization process are as well experiencing the same “real-time” transformation as postmaterialism does, contradicting most of the literature about the subject.

4. Secularization and Religious Change

"The theory of value change argued here [in *Sacred and Secular*] suggests that secular social trends have only a glacial effect on cultural norms, but that, through the socialization process, the experience of the prevailing conditions during the formative years of childhood and early adolescence leave a lasting imprint on people: the religious values held in later life are largely shaped by one's formative experiences."

Norris and Inglehart (2004)

4. SECULARIZATION AND RELIGIOUS CHANGE

Secularization theory has been proposed as an explanation for the abundant survey evidence on religious decline across affluent societies. Authors like Norris and Inglehart (2004) argue that secularization, considered a dimension of modernization, changes the world in a gradual fashion. Religious predispositions are supposed to be acquired early in life and remain relatively age-stable, following the "impressionable years" model of learning. Societal changes are then a product of cohort replacement, where older and more religious generations are progressively substituted by younger and more secularized ones. Most of the empirical research on secularization has concentrated on the evolution of church attendance rates, and not that much on the dynamics of religious values. My purpose here is to study both elements, and show that religious practices as well as values can change within an individual's lifetime. I confront the traditional "impressionable years" model with a more realistic lifetime model of change in the area of religiosity. The field of religious orientations is perhaps one in which lifetime changes could be harder to spot, as these dispositions are supposed to be deeply rooted early in life. Some of the religious indicators I study here are integrated in Inglehart's more general theory of individual modernization. Testing my main hypothesis of within-cohort change on them, apart from doing it on postmaterialist values, will be a more robust check of my general statement.

First, I study the evolution of churchgoing, the most widely analyzed measure in the literature, on a set of EU member countries using the Eurobarometer survey data. I apply the counterfactual method employed in the case of postmaterialist values to test the effects of cohort learning compared to cohort replacement. I find strong evidences of a within-cohort change in church attendance, meaning that in many European countries all generations have progressively abandoned churches over the years. Still with Eurobarometer data, I focus on the study of the Belgian case, a country with a particularly remarkable aggregate decrease in religious practice. Studying this case makes it possible to apply one of the most appropriate techniques to disentangle age, period and cohort effects: cross-classified random effects models (Yang and Land 2006). This technique allows simultaneously modeling the three APC components on church attendance, the only way to avoid misleading interpretations about the source of change. The final results not only reveal strong secularizing period effects going in the

same direction of cohort effects, but a counterbalancing increase of church going with age, overlooked by Norris and Inglehart (2004) and a branch of the literature on secularization.

In the field of religious values, I study the importance of religion and the importance of God in respondent's life. This last item is a key indicator of Inglehart's rational-secular axis of values. I use the World Values Survey data with a cluster of 28 OECD countries experiencing societal modernization over a time span that ranges from 1981 to 2007. Although this dataset covers a large period of time, the number of waves is insufficient to apply proper cross-classified random effects models. However, I follow an alternative strategy that allows me to still simultaneously model these three components using hierarchical linear regression by taking advantage of the statistical power the amount of countries in the sample provides. The individual level data is nested within waves and countries, and in my models I account for these three different sources of variation: across individuals, countries and over time. By doing so, I am able to test at the same time hypotheses at the individual and country levels, as well as theories of change. Multilevel dynamic explanations of this kind are uncommon in the literature of sociology of religion. At the static societal level I confront the theory of secularization based on existential security, with the cultural background approach, and the religious market hypothesis. At the dynamic societal level, I test the effects of changes over time in country-level covariates linked to modernization: are countries experiencing faster development quicker in their secularization process? At the individual level I add age, cohort and family formation effects, together with the usual covariates of religiosity. The results at the country-level confirm the validity of the secularization theory based on existential security, and income inequality emerges as a key explanation for differences in religiosity among already wealthy countries. Although there are signs of a religious revival, countries experiencing faster modernization processes see how their religiosity levels decline quicker, even when controlling for cohort replacement effects. In fact, changes happen in real-time, contradicting Norris and Inglehart's assumptions. At the individual level, apart from the well-known generational effects that confirm the existence of a secularizing process in the long run, relevant life-cycle and family formation influences are identified confirming the capacity of individuals to change along the continuum of life.

Theories of Religious Change

The theory of secularization predicts a decline in the social significance of religion in society (see Wilson 1982, Dobbelaere 1999, 2002, Bruce 1992, 2002, Norris and Inglehart 2004 among others). The secularization process is often conceptualized as a dimension of modernization, a more general societal transformation which involves phenomena such as rationalization, functional differentiation, individualization, or globalization. Country's cultural heritage and theological differences between religious creeds are also thought to play a role in the secularization process in a path-dependent way (Martin 1978a, 1978b, or Inglehart and Baker 2000)[26]. As Schwadel (2011) mentions, secularization theories vary in their scope from those more focused on the individual-level which study the decrease in people's religious values and practices (e.g. Norris and Inglehart 2004), to those more institutionally oriented that emphasize the declining influence of religion on social institutions (examples of which are Chaves 1994 or Dobbelaere 1999). The individual-level secularization perspective predicts that religious participation and beliefs will decline as societies modernize (Norris and Inglehart 2004, Voyé 1995). This approach also suggests that the erosion in religious activity and belief takes place gradually across birth cohorts (Chaves 1989, Sasaki and Suzuki 1987, Norris and Inglehart 2004).

The religious market model is a competing theory to the secularization approach (Stark and Bainbridge 1980, 1988, Iannaccone 1991, 1992, Stark and Iannaccone 1994, Stark and Finke 2000). Using a metaphor of market economy, it proposes that religious competition among cults increases the levels of institutional religiosity and affiliation. It explains European religious decline as a result of a malfunctioning in its religious markets, affected by cult monopoly and burocratisation of religious institutions. Different evidences indicate that this theory is hardly applicable outside the US (see Draulans and Halman 2003, Halman and Draulans 2004, or Norris and Inglehart 2004 among others).

Pollack and Pickel (2007) mention a third more recent approach coexisting with the secularization and religious market theories: the religious individualization thesis (in

[26] Predominant religious cultures such as Catholicism, Protestantism or Islamism provide distinctive worldviews that shape the culture of each nation, even if religion is not salient anymore. These cultural traditions adapt and evolve in response to the developments in the contemporary world, yet still reflecting the legacy of the past (Norris and Inglehart 2004).

Europe see Davie 1994, Heelas and Woodhead 2005, Hervieu-Léger 2000, Cipriani 1989; and in the US see Roof 1993, 2001, Wuthnow 1998, Fuller 2002, Inglehart and Baker 2000). In contrast to the secularization theory, the individualization thesis states that modernization will not produce a simple religious decline, but a change in the social forms of religion. Traditional and institutional forms of religiosity will be replaced by more subjective ones detached from church, individually chosen, and syncretistic in character. Pollack and Pickel (2007) examine the empirical applicability of the individualization thesis to the German case and conclude that the rise of individually determined non-church religiosity cannot compensate for the losses of institutionalized religiosity, since non-church religiosity remains rather marginal and is interwoven with traditional Christian religiosity. Contradicting the "believing without belonging" hypothesis (Davie 1994, 2002), religious individualization seems to be therefore only a component of the predominant secularization process[27].

Norris and Inglehart (2004) propose an individual-level version of the secularization thesis based on the concept of existential security. They define secularization as the systematic erosion of religious practices, values, and beliefs, and explicitly inscribe it as part of the more general process of modernization which Inglehart has devoted to study over the years. They believe that the importance of religiosity persists most strongly among vulnerable populations, especially those living in poorer nations and facing personal survival-threatening risks: "Feelings of vulnerability to physical, societal, and personal risks are a key factor driving religiosity and the process of secularization –a systematic erosion of religious practices, values, and beliefs– has occurred most clearly among the most prosperous social sectors living in affluent and secure post-industrial nations". As countries turn wealthier and safer, they become more able to provide higher levels of existential security to their members, and so the need for religion decays. Norris and Inglehart present evidences of these decreases from surveys monitoring European churchgoing during the last fifty years: "During the twentieth century in nearly all postindustrial nations official church records show the pews almost deserted". This makes them claim that the population of almost all advanced industrial societies has moved toward more secular orientations during the past fifty years[28].

[27] Davie (1994) found a deep mismatch between religious values that people professed ("believing"), and actual churchgoing and religious practice ("belonging") in Britain.

[28] There has been criticism to the secularization thesis in recent times, based on evidences of a supposed religious revival. Norris and Inglehart consider this critique to rely excessively on selected anomalies and

Conversely, countries that have not succeeded in modernizing remain as religious as they were in the past. All in all, they consider secularization to be a largely predictable process, "based on knowing just a few facts about levels of human development and socioeconomic equality in each country".

As both religion and secularization are considered multidimensional phenomena (see Wilson 1985, Dobbelaere 1981, 1985 and 1987), Norris and Inglehart's approach use multiple indicators to test the secularization thesis. In some occasions they refer to two dimensions: "The critical test is what people say is important to their lives *(values)* and what they actually do *(practices or behaviors)*"[29]. And in other occasions they distinguish among three core dimensions of secularization: religious participation, values, and beliefs. Church attendance is not considered a value, but a practice or a ritual. Nevertheless, it is thought to be tightly related to religious values. Norris and Inglehart's (2004) grouped it as a form of religious participation, together with praying. The secularization process is supposed to involve the decline of collective religious practices, like the ritual of regular church attendance for Protestants and Catholics, and also the erosion of individual religious practices like praying (Norris and Inglehart 2004).

Secularization concerns values as well, though their dynamics is not so often analyzed. As explicitly defined by Norris and Inglehart, values are goals that people prioritize for their society, community, families, and themselves. In this vein, secularization is reflected in the reduction of the importance of God and religion in people's lives, and growing indifference to spiritual matters among the public. Norris and Inglehart also explicitly connect religious values and practices in their "religious participation hypothesis" arguing that the latter are supposed to reflect the former, so practices should follow a similar dynamics to that of values. "The declining importance of religious values in postindustrial nations erodes regular participation in religious practices (attendance at services of worship and engagement in regular prayer or meditation)." However, Davie (1994) argued that the erosion of religious practices may not exactly match that of religious values. Practices are embedded in rituals and institutions, and those could have faded more rapidly than abstract religious values, as society as a whole

to focus mainly on the US (which is a deviant case). In their book *Sacred and Secular*, they claim to go beyond anecdotal evidence and find overwhelming evidences in favor of secularization.

[29] Words in brackets are mine.

modernizes following the "believing without belonging" thesis (Davie 1994)[30]. To Norris and Inglehart (2004) secularization also refers to the erosion of faith in the core beliefs held by different world theologies. Examples of beliefs are adherence to the contents of religious creeds and teachings. According to these authors, secularization is also thought to involve issues as abortion, divorce, and homosexuality, ethical relativism, and growing individualism.

The Age, Period and Cohort Effects Debate

Secularization theories at the individual level often make the assumption that in affluent countries religiosity declines progressively across cohorts (Schwadel 2011). Norris and Inglehart's theory (2004) is a clear illustration of it. These authors frame individual-level religious change as a generational phenomenon, in the same vein as the "socialization hypothesis" in postmaterialist values. In their own words: "people who experience ego-tropic risks during their formative years (threats to themselves and their families) or socio-tropic risks (threatening their community) tend to be far more religious than those who grow up under safer, comfortable, and more predictable conditions". Their theory of change based on the idea of existential security operates through cohort socialization and cohort replacement. In the formulation of their "religious values hypothesis" they express the following: "the experience of living under conditions of human security during a person's formative years will shape the demand for religion and therefore the priority that people give to religious values. Growing up in less secure societies will heighten the importance of religious values, while experience of more secure conditions will lessen it". People in advanced industrial societies are supposed to grow increasingly indifferent to traditional religious leaders and institutions, and become less willing to engage in spiritual activities[31]. In

[30] The individualization thesis, to which Davie's ideas can be ascribed, argues that in postindustrial countries rather than simple decline in religiosity, there is an evolution from collective engagement through traditional religious institutions toward individual or personal spirituality exercised in the private sphere.

[31] Reflecting about the causal mechanism by which religion provides reassurance in context of existential insecurity, they underlined religion's capacity to reduce stress enabling people to shut out anxiety and focus on coping with their immediate problems. Conversely, people raised under conditions of relative security can tolerate ambiguity and have less need for the absolute and predictable rules that religious sanctions provide. They argue that people with relatively high levels of existential security can more readily accept deviations from familiar patterns than people who feel anxiety concerning their basic existential needs.

their own words: “We predict that the strongest decline in religious participation will occur in affluent and secure nations, where the importance of religion has faded most”. In affluent countries, generational differences will be strongest in religious values, and these will tend to be linked with patterns of religious behavior. “Rapid cultural changes in more affluent societies have shifted their basic values and beliefs in a more secular direction, opening up a growing gulf between them and the less affluent societies.” The gap is not only between generations, but across countries. Poorer countries not experiencing modernization and human development are not supposed to portray between-cohort differences, as the older generations live basically under similar circumstances as the younger ones.

To further illustrate the adherence of Norris and Inglehart to the generation hypothesis, I reproduce one more quote: “there are strong evidences that religious values are learned early in life, in the family, school, and community, as a part of the primary socialization process, so that the enduring values of different birth cohorts can be attributed mainly to their formative experiences in childhood and adolescence”. In their analysis of religious participation by birth cohort and by type of society, they found that postindustrial countries present a sharp and steady decline in religiosity from the oldest cohort born in the interwar years down to the postwar cohort, and then a more modest slide down to the sixties generation, before reaching a plateau among the youngest cohort. Not denying the relevance of generation effects to explain age differences, my position here is not to favor *a prori* judgments. Proper methods should be applied in order to know the real contribution made by age, period and cohort components to social change. If period or age effects are able to consistently shape individual values, attitudes and behavior in real-time, this would have implications for Inglehart’s whole theory of social change.

Norris and Inglehart (2004) disregard relevant life-cycle or period effects on religious values and practices. However, they do not apply the adequate techniques to simultaneously control for age, period, and cohort effects. Until these techniques are used, any direct interpretation can be dangerously misleading, as Yang and Land (2006) illustrate in their analysis of verbal test scores. Norris and Inglehart refuse to disentangle the APC effects with the available data saying it is not possible: “Of course with only cross-sectional survey evidence, rather than numerous waves of cross-

sections, or with panel surveys among the same respondents over successive waves, it is impossible to disentangle generational effects from life-cycle effects that may alter attitudes and values as people move from youth to middle age and then retirement." As a matter of fact, repeated cross-sections have been on hand for enough time to perform the type of analysis necessary to disentangle APC effects, and different kinds of hierarchical linear models are available for that purpose.

Norris and Inglehart criticize the skeptics of the secularization thesis that attribute the differences in religiosity between the young and old to life-cycle effects. In fact, if age differences were due to life-cycle effects, this would contradict their idea of a historical change. They explicitly mention: "there is not any tendency for people to get more religious as they grow older: in agrarian societies, the young are fully as religious as the old. But in postindustrial societies, the young are much less religious than the old". However, they reflect on the theoretical possibility of life-cycle effects: "As people age they enter different stages of life, and the experience of education, entry into the labor force, the formation of family through marriage and childrearing. And then retirement from the workforce, could each be expected to shape beliefs about religion". They also mention the effect of community networks and media: "Cultural messages conveyed in the mass media, and contact with church organizations and religious social networks, could also color perceptions about the appropriate norms and practices of religious attitudes and behavior in a community". However, they basically disregard life-cycle effects and do not account for them in their analysis, arguing that they lack the proper data to distinguish among the age-period-cohort components.

Earlier in this dissertation, I have been focusing on the amount of within-cohort change produced by period effects. However values can also change within a generation as a result of aging, being still in tune with my hypotheses of lifetime learning. Change due to the aging processes is usually a consequence of a transformation in individual conditions related to biological, psychological or social factors, whereas period effects are dependent on the external context. Actually age effects in religiosity have been quite acknowledged in the empirical literature. Argue et al. (1999) indicate that the causal mechanism that binds age and religiosity is explained by three models. The life course model attributes change to transformations in social roles, particularly in the family. The traditional model focuses on developmental processes related to age *per se*. And the

third interpretation considers age as a statistical artifact associated either with cohort replacement or period effects.

The life course model explains age differences in religiosity through the effects of family formation. This approach has been quite hegemonic in the United States during the 1990s, where the coexistence of age differences with an aggregate stability in measures of religiosity, mainly in church attendance, originated a debate about the possible motives. Some authors proposed that age effects were caused by family formation factors (Hout and Greeley 1987, 1990, Greeley 1989, Firebaugh and Harley 1991 among others). Some others advocated for generational differences due to structural secularization processes (Sasaki and Suzuki 1987, Miller and Nakamura 1996), and for a combination of a cohort decline and a religious revival affecting everyone (Chaves 1989). The across cohort decline in religious practice and belief was also considered to be linked to generational differences in culture, education, geographic mobility, urbanization, and other attributes that influence religion (see Schwadel 2011 commenting on Chaves 1989, Roof and McKinney 1987, Sasaki and Suzuki 1987, Wuthnow 1976).

The empirical literature from the US, where the life-cycle interpretation seems to have been dominant, underlines the close association between religious commitments, family formation, and childrearing (Sherkat and Ellison 1999). Family formation models assume that marriage and the arrival of children into a household lead to increasing church attendance, while divorce and cohabitation reduce religious activity (Stolzenberg et al. 1995, Thornton et al. 1992, Myers 1996, Sherkat 1998). As Stolzenberg et al. (1995) argue “church membership provides young, recently married couples with emotional support and contacts with other families” and “parents of pre-adolescents school-age children are more likely to be church members than are persons without children in this age”. Aging is supposed to boost religious participation because of increased integration, desire for social support, or a heightened need for explanations of the meaning of life (Stark and Bainbridge 1987).

Reflecting on the causal mechanism of life course events, Bainbridge (1990) talked about the changing role of church throughout the life-cycle in his analysis of church membership rates in the US. According to this author, children use to follow the

religious patterns of their parents, but when they reach adulthood their social bonds are disrupted and had to face the challenges of becoming autonomous adults what may distract them from religion. However, when people marry and have children, “both the desire to give their children a good education and the fact that building a family typically embeds the person more solidly in the community will cause renewed religious involvement”.

Argue et al. (1999) examined the effect of age, period, and family life course events on a measure of religious influence on daily life in the US over a 12-year period, using a three-wave panel survey. Their study is especially valuable since they estimated the effect of age controlling for cohort and period effects. The results showed a significant, non-linear increase in religiosity with age, with the greatest raise occurring in the middle adult years. This nonlinear increase was stronger for Catholics than Protestants. They also found a significant decline in religiosity between 1980 and 1988, but no evidence of a period effect between 1982 and 1992. All in all, family life course events happened to account for little of the overall aging effect. It also showed sex-specific age effects, and the capacity of childrearing to boost religiosity. These evidences indicate that, at least in the US, religiosity levels actually change through the continuum of life.

Given that the US is an exceptional case among developed countries, where church attendance rates have not decreased substantially; there is a need to expand the analysis to other national cases. Tilley (2003) extends it to the United Kingdom using both cross-section and panel data regarding church attendance. His main aim is to examine how family formation factors, such as marriage and childrearing, affect church attendance, and to verify if these effects are sex-specific. His results indicate that generational differences are in fact responsible for both the majority of differences between age groups, and the British overall decline in church attendance during the last 40 years. However, he also establishes the presence of period effects, and small but existing life-cycle effects.

The effects of age are not only restricted to family formation factors. In the traditional model, age *per se* is supposed to exert its own impact (Argue et al. 1999). As Stark and Bainbridge (1988) assert, the reason can be that people become increasingly faced with existential matters and the meaning of life. The personal needs for hope and comfort

that religion satisfies increase in old age, given that the discomfort of illness and the imminent threat of death make the conditions of life less satisfactory (Stark and Bainbridge 1987). Using the very terminology of Norris and Inglehart, existential security is in fact linked to ageing. As people grow older, certain issues turn out to be more prominent: the fear of death, the consciousness of the finitude of life, or suffering from illnesses. These factors would raise existential insecurity through the natural human life-cycle. Thus, ageing will end up boosting religious activity and religious beliefs (Sherkat and Ellison 1999). In this respect, Wuthnow (1976) even argued that young people might return to the views of their parents as they grow older. Bainbridge (1990) warns that in the field of church engagement we could also expect a negative association with aging. The disengagement theory in gerontology holds that old people suffer a cut off of their ties with the rest of society (Bahr 1970). In later stages of life church membership should decline, as children are not at home anymore and the disabilities of old age make active social involvement more difficult. Taking into account this whole literature, I hypothesize that I will still be able to identify aging effects in religious values and practices, once controlled for cohort effects. Moreover, age effects could tend to slow down the eventual impact of generational replacement, as they will go in the opposite direction: increasing religiosity levels as people age.

Apart from age effects, Norris and Inglehart (2004) seem to have difficulties to integrate period effects into their analysis. They subscribe the common view of period effects as random shocks seemingly unconnected from the ongoing modernization process: “Significant events could generate period effects, exemplified by the impact of the 9/11 events that temporarily boosted churchgoing in the US, or the influence on Catholicism of the Papal encyclical on contraception issued during the 1960s, or deep internal divisions splitting the Anglican church leadership over the ordination of women and homosexuals”. However, as stated in other parts of this dissertation, period effects can also come in the form of a trend, not just as period shocks; the same kind of trend that causes linear cohort effects. In this vein, Argue et al. (1999) talk about the similar nature generation and period effects share, that makes them different from age effects produced by the biological, psychological or social changes of the individual. Both generation and period effects capture the influence of external societal conditions, contextual influences shared by members of all age groups, which specially affect those in their impressionable-years. Modernization in some countries is a process with an

upward trend that produces not only cohort effects but constant period effects in the same direction.

Evidence in this direction was presented by Eva Hamberg (1991), who analyzed the stability and change in religious attitudes and beliefs in Sweden using a panel survey undertaken between 1955 and 1970, a crucial secularizing period for this country. She showed that the large decline in adherence to traditional religious beliefs in Sweden was due both to cohort effects connected to differences in socialization, and to a decline in religious beliefs within birth cohorts (due to period effects). This decline was most pronounced in the younger age group. The results contradicted traditional age effects which assume an increase in religiosity over the life-cycle. In fact, Swedish people were secularizing on real-time, and this was tested for a diverse set of indicators of religiosity ranging from religious attitudes and beliefs, to collective and personal practices.

My supposition is that even in the field of the apparently most stable religious predispositions we will be able to spot real-time changes produced by period effects which will follow the same trend as generation effects. In some cases, the rhythm of cohort replacement will not be sufficient to explain the accelerated speed of secularization, especially in countries experiencing quicker modernization processes. In this respect, Jagodzinski and Dobbelaere (1995) talked about the "contagion model": a process of intragenerational change towards religious disengagement across Western Europe[32]. They called it "contagion model" because disengagement from religion would tend to spread out rapidly. According to these authors, if church disengagement is a stepwise or contagious process, it may affect all generations during periods of rapid change. The decline at each step may be larger than the generational differences during periods of stability or slow change. As a consequence, a massive decline in church integration in a society at large should be expected, as well as in all cohorts –intra-cohort change– within fairly short time-spans. They also predict that older generations may adapt less rapidly to the new norms and beliefs, and, as a result, the generational differences might increase during periods of rapid change.

[32] These authors refered to three different models of change: a) the gradual model, which is the standard form of generational change proposed by Norris and Inglehart (2004), b) the watershed model, with a divide between post-war generations and the more religious older cohorts, and c) a contagion model, which assumes intra-cohort change.

In their view of secularization, the erosion of religion may seem invisible during long periods of time: “Although religious doubts raise, people remain within the churches, participate in rites and services, and consider themselves Christians”. According to these authors, specific events are necessary before these internal doubts turn into overt protest or exit. These events could be criticism of the churches by political elites, mass media, or theologians. The expected result would then be an exit from church across all cohorts. They hypothesize that younger cohorts might react more rapidly, given that they do not have to abandon familiar beliefs and habits. Older cohorts, they said, might tend to remain at higher levels of church integration, partly because they are less affected by the process of secularization and partly because some older people are unwilling to change in all cohorts within fairly short time periods. The empirical evidence they presented (1995) seemed to confirm their contagion model. As they put it: “the de-traditionalization of the lifeworld has affected all cohorts, not only the younger ones”. They observe rapid intra-cohort change in cases like Belgium, France, and the Netherlands. The proportion of nuclear church members dropped in all cohorts, although it specially affected the war and post-war cohorts.

Most of the empirical research on the stability and change in religious indicators has been flawed in a way or another as age-period-cohort effects were not simultaneously modeled. In this respect, Schwadel (2010a, 2010b, and 2011) has recently made a fundamental contribution, however his research is restricted to the US case. He applied two innovative statistical techniques to simultaneously model the three components of the APC conundrum: the cross-classified random effects model (see Yang and Land 2006), and the intrinsic estimator approach (see Yang et al. 2008). When Schwadel used the first technique (2010a) he predicted lower cohort effects than with the latter (2011) on the same dependent variable. First he focused on church attendance rates in the US using the GSS repeated cross-sectional data ranging from 1972 to 2006, and applied cross-classified random effects models. He was able to spot clear and positive age effects, and just a slight and negative generation effect primarily due to compositional changes across cohorts, and a minor period decay. From his results Schwadel concluded that “there is little overall cohort effect on Americans’ frequency of religious service attendance and only a modest period-based decline in attendance in the 1990s”. Additionally he explored the heterogeneous APC effects conditional on Catholic affiliation, sex, and region.

In 2011, Schwadel applied the intrinsic estimator approach to disentangle APC effects in a larger set of religiosity indicators also using the GSS data. He studied church attendance again, weekly prayer, belief in biblical literalism and in the afterlife. He obtained a picture of the American religious situation which resembled more to the secularizing process. Again he spotted clear positive age effects, small to moderate negative period effects, but clear cohort effects in all indicators except from the belief in the afterlife. In church attendance he found strong cohort and age effects coexisting and counterbalancing each other: when controlling for positive age effects, there appeared a clear decline across all cohorts. This piece of evidence contradicted a branch of the previous American empirical literature that considered life-cycle factors to be the cause of age differences. He spotted a period-based decrease in regular attendance, though period changes were far smaller than the changes across cohorts. He also found a notable decline in prayer across cohorts, even though there was little net period-based variation. He argued that "(t)he positive effect of age on prayer and the across-cohort decline suggest that cohort replacement may eventually lead to declines in weekly prayer despite its apparent stability over time". With respect to biblical literalism, there appeared clear positive age effects, negative period ones, and a pattern of cohort erosion. For the belief in the afterlife, the results only showed modest age, period and cohort effects.

Schwadel's research exemplifies the importance of applying the proper techniques to simultaneously model APC effects. When old data is reviewed in light of new methods, years of previous debates and conflicting evidences can be overcome with a single statistical analysis. Historically, researchers made theoretical choices in specifying their models to avoid the APC identification problem in religious activity and beliefs, usually ignoring one of the three components of the triad. However, to avoid deceptive interpretations, it is vital to simultaneously model the three components of the APC conundrum. If just two of them are considered concurrently, misleading results may arise. In this respect, Schwadel's results show that age confounds cohort effects when age and cohort are not both included in the model. Similarly, important trends are masked if we look only at gross period effects. For example, although prayer is relatively stable in Schwadel's descriptive analysis, the APC models show meaningful across-cohort decline. Period effects may also be influenced by the age composition of

specific birth cohorts since unmeasured cohorts effects can suppress time trends (see Miller and Nakamura 1996).

My purpose in the following pages is to apply these more appropriate techniques to religious practices and values but extending the analysis beyond the US case, usually considered an outlier, to a more general group of countries experiencing modernization overtime. The main aim of the analysis is to question the age-stability hypothesis in values, symbolic attitudes and behaviors linked to the individual modernization process, of which secularization is a derivative in the religious field. One of the ways to refute it is testing whether the effects of age and time period still have an impact on religiosity once they are controlled by generation effects. Introducing more control variables is also necessary, to see if the effect of age, generation and period is in fact hiding the influence of additional confounders. There can as well be composition effects linked to aggregate differences in education, place of residence or occupation between cohorts, which have to be controlled to better approach the true causal chain.

Declining Church Attendance Rates

In the analysis that comes next, I focus on studying church attendance rates on a particular set of affluent postindustrial societies which share similar level of development and Christian heritage: Belgium, Denmark, France, Great Britain, Greece, Ireland, Italy, Luxembourg, Portugal, Spain, The Netherlands, and West Germany. The period of observations goes from 1970 to 1998, but in some countries it is considerably shorter. The choice of these cases has been already commented on the "data and methods" part, but I would underline two motives: 1) these cases are present in the Eurobarometer Trend File, the longest available repeated cross-section merged data of this nature that includes church attendance; and 2) they are all countries that have experienced some sort of modernization during the period of observations. As my main interest is to measure within-cohort changes, I need to look for countries that have actually undergone transformations. Norris and Inglehart argued (2004) that in societies that have experienced sustained periods of rising economic growth and physical security the young should be less religious in their values, attitudes, and practices while the older cohorts should display more traditional orientations. These authors continue to say that since basic values do not change overnight, socialization theory suggests that we should find a substantial time lag between changing economic circumstances and their impact on prevailing religious values. Their argument is linked to the "impressionable years" model of learning: adults retain the norms, values, beliefs and practices that were instilled to them during their formative pre-adult years. Then cultural values are supposed to change by cohort replacement. Next I will test whether this assumption holds for the case of church attendance in Western Europe.

Church attendance is measured by a survey question with the following wording: "How often do you attend religious services apart from weddings, funerals, and other religious life-cycle ceremonies?". And the response options are: never, once a year, several times a year, once a week, and several times a week. Some researchers argue that surveys overestimate service attendance, because of respondent overreporting (see Schwadel 2010a). However, it is quite likely that the effects of overreporting do not particularly change over time (see Hout and Greely 1998), therefore it would not affect the time-series analysis performed in the following pages.

Figures 4.1a and b show the evolution of religious practice from the seventies to the late nineties in the countries included in the Eurobarometer Trend File. It portrays the percentage of the population that goes to church at least once a week. In almost all of these cases there has been a decrease in religious practice. To better compare the dynamics of the series, each one is regressed on time as a deterministic linear trend. The countries with steepest slopes are those that have experienced a higher decrease in church attendance over time. Belgium leads this ranking, going from a majority of 50% of the people attending weekly religious services in the seventies to only 10% at the end of the nineties. In Belgium, church attendance has diminished by 1.9 percent points each year. Other countries with steep decreases are Ireland, Luxembourg, The Netherlands, Spain, France and West-Germany; ranging from a slope of -1.54 in the former to a -0.69 in the latter. Portugal shows only a moderate decrease that cannot be clearly interpreted as a trend, and its time series is not long enough to be able to generalize.

The level of church attendance from which each country starts is clearly related with its rate of change. The higher the religious practice at the beginning of the series, the higher the rate of decrease. This last point can be assessed by the correlation between the slopes and the intercepts presented at the bottom of table 4.1, which is as high as -0.68. It is understandable that the more you have got at the departure point, the more you can lose over time. Therefore, those countries that already had very low levels of church attendance at the beginning have not experienced remarkable decreases. This situation can be depicted as a floor effect, and concerns countries such as Denmark, Norway, East-Germany, Great Britain, and probably Finland and Sweden, though these last two countries lack of a time series long enough to assert it.

Figure 4.1a Percentage of the Population Attending Church at Least Weekly across Western European Countries, 1970-1998.

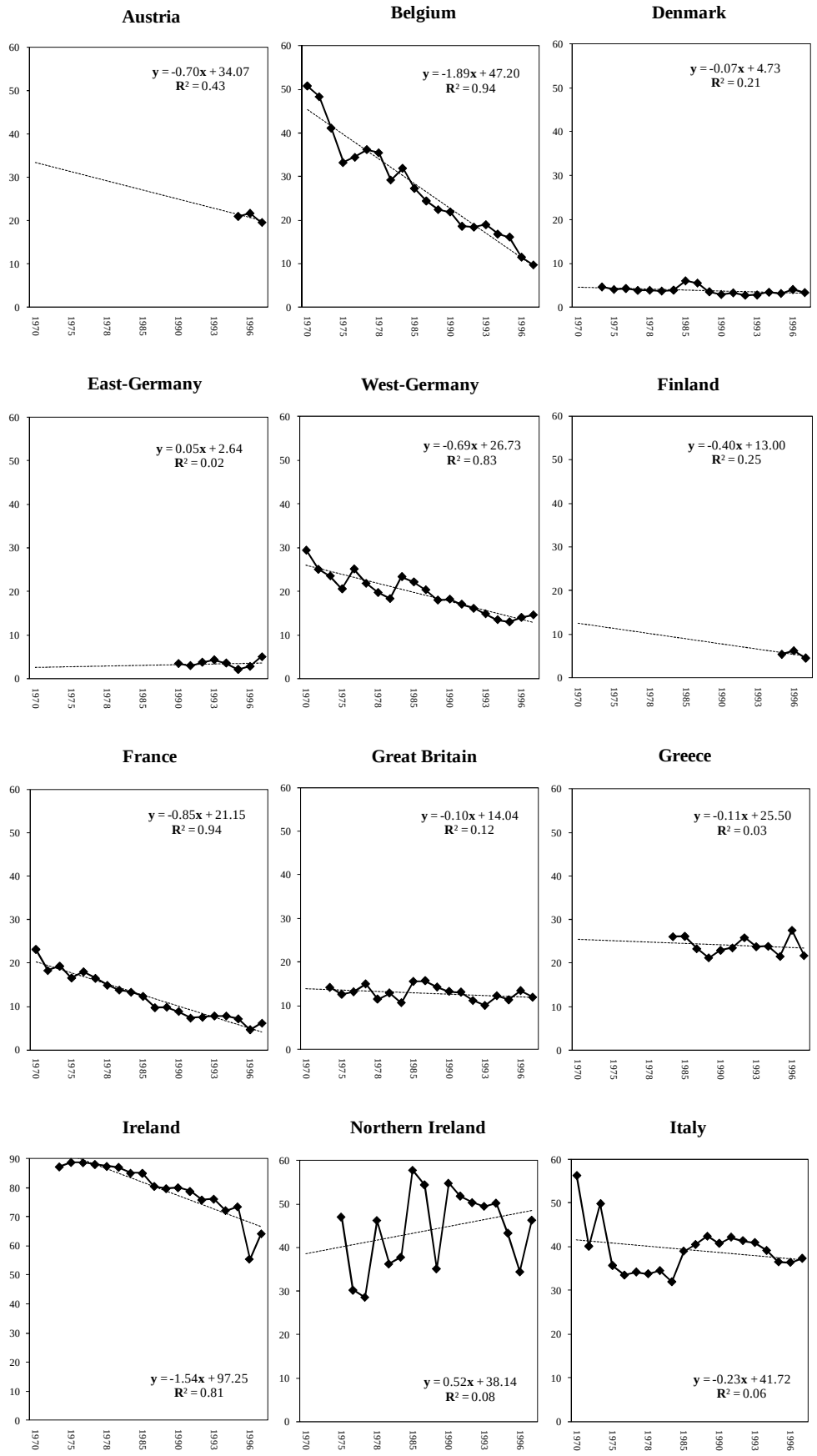
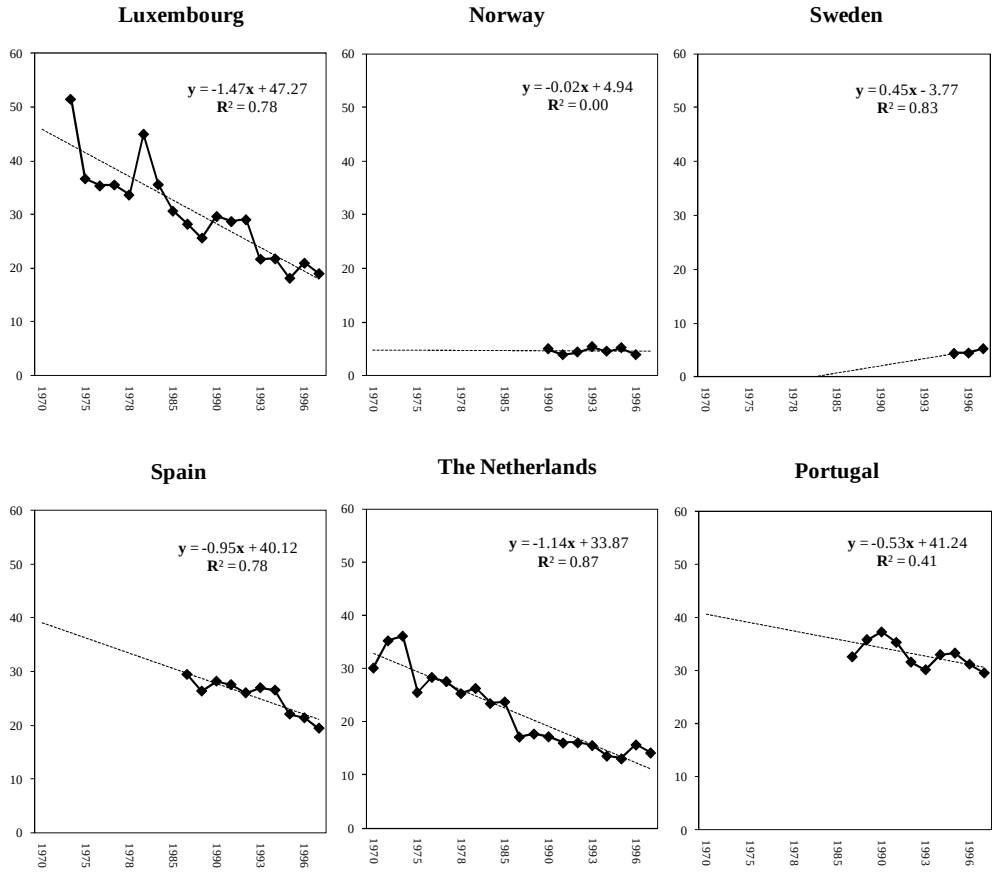


Figure 4.1b Percentage of the Population Attending Church at Least Weekly across Western European Countries, 1970-1998.



A third group of countries do not present any clear trend in religious practice. Italy, Northern-Ireland and Greece remain at similar levels as the ones of their departure point at the beginning of the series. Their yearly period shocks do not portray any clear pattern of decrease or increase in church attendance levels, as it happens in other countries. In particular, Italy and Northern-Ireland remain with their medium to high levels of religious practice (40%), and Greece in between 20 and 30%. There are many reasons behind the differences in levels of religious practice among countries, as well as for their particular dynamics over time. And they could be properly analyzed and modeled, however they fall out of the scope of this particular analysis. Here my interest is to compare the contribution of cohort replacement to that of the period, to establish the capacity of generations to change over their life span.

Table 4.1 Comparison of Time Trends across Western European Countries.

	Slope	Intercept	R-sq.	Obs.
Belgium	-1.89	47.20	0.94	20
Ireland	-1.54	97.25	0.81	18
Luxembourg	-1.47	47.27	0.78	18
The Netherlands	-1.14	33.87	0.87	20
Spain	-0.95	40.12	0.78	10
France	-0.85	21.15	0.94	20
Austria	-0.70	34.07	0.43	3
West-Germany	-0.69	26.73	0.83	20
Portugal	-0.53	41.24	0.41	10
Finland	-0.40	13.00	0.25	3
Italy	-0.23	41.72	0.06	20
Greece	-0.11	25.50	0.03	12
Great Britain	-0.10	14.04	0.12	18
Denmark	-0.07	4.73	0.21	18
Norway	-0.02	4.94	0.00	7
East-Germany	0.05	2.64	0.02	8
Sweden	0.45	-3.77	0.83	3
Northern Ireland	0.52	38.14	0.08	17
Mean	-0.54	29.44	0.47	14
SD	0.68	23.49	0.37	7
Max.	|1.89|	|97.25|	0.94	20
Min.	|0.02|	|2.64|	0.00	3
Correlations				
Slope - Intercept	-0.68			
Slope - R-sq.	-0.70			
Obs. - Slope	-0.40			
Obs. - R-sq.	0.28			

Next, I apply the counterfactual method developed by Abramson and Inglehart to isolate the effects of cohort replacement on the aggregate change in church attendance across countries. My purpose is to compare cohort replacement effects with those of the period, which can be also named within-cohort change. Here I only study countries with the longer time series, meaning at least 10 observations (excluding Northern Ireland). I create counterfactual time series data for each country by artificially removing cohort replacement and simulating non-mortality in the members of earlier generations. Figures 4.2a, b and c show the comparison of both series with and without cohort replacement for each country. The evidence presented here clearly indicates that the

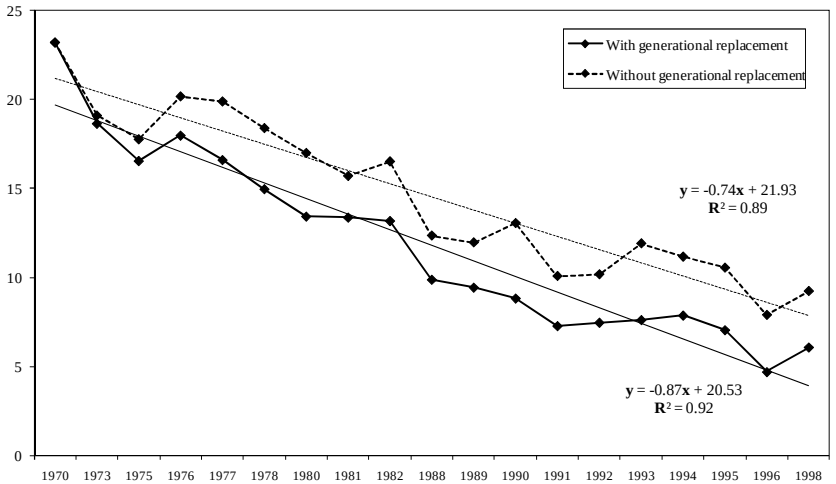
profound aggregate changes in the patterns of church attendance across Western Europe come in a great deal from a process of within-cohort transformation and not just from cohort replacement, contradicting Inglehart and Norris (2004) assumptions. Older generations have changed their religious practice over the years. In many countries people who regularly attended religious services in the seventies has stopped doing so by the end of the nineties.

France is one of the cases in which the trend of the series without cohort replacement is less distinguishable from the one with cohort replacement. In fact, the z test comparing differences in slope coefficients of both time trends presented in table 4.2 demonstrates that it is not significant. The series with and without cohort replacement undergo the same dramatic decrease. The average slope of the trend with cohort replacement across countries is 0.80 (in absolute terms), quite similar to the 0.58 of the trends without replacement. The correlation between the slopes with replacement and those without replacement is as high as 0.73. Other cases similar to France, where there are no statistically significant differences between slopes are Ireland, Luxembourg and West Germany. In Belgium and The Netherlands, differences in slopes are significant; however both are still negative and fairly similar to the trends with cohort replacement.

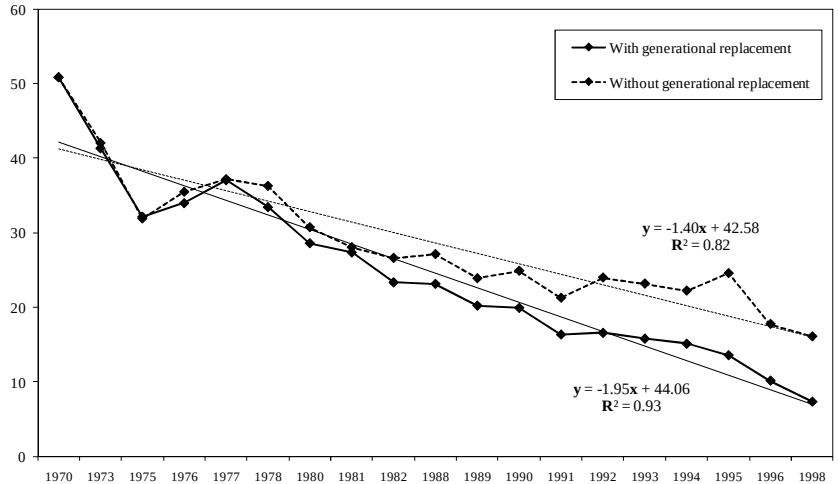
With the counterfactual method, the series without cohort replacement portray only pure period effects. As can be seen, older generations have been exposed to them as much as the rest of cohorts. When comparing the total amount of change in religious practice predicted by OLS models with linear time trends in both series presented in table 4.3, it is possible to see that the contribution of within-cohort change constitutes as much as 85.1% in the case of France, 84.4% in Ireland, or 71.8% in the case of Belgium. It is very high as well in the cases of Luxembourg (in between 70 and 60%), The Netherlands or West-Germany. However, in Spain and Portugal the major contribution to church attendance reduction seems to come from cohort replacement.

Figure 4.2a Evolution of Church Attendance in Models with Cohort Replacement and without Cohort Replacement, 1970-1998.

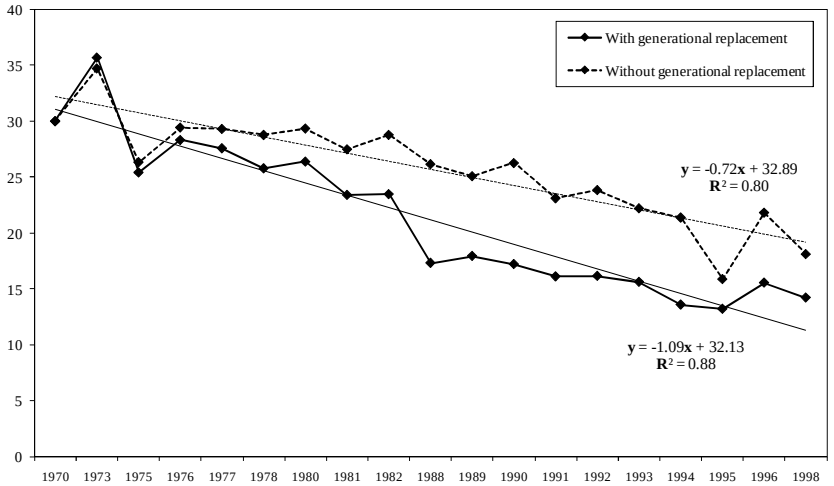
France



Belgium



The Netherlands



West-Germany

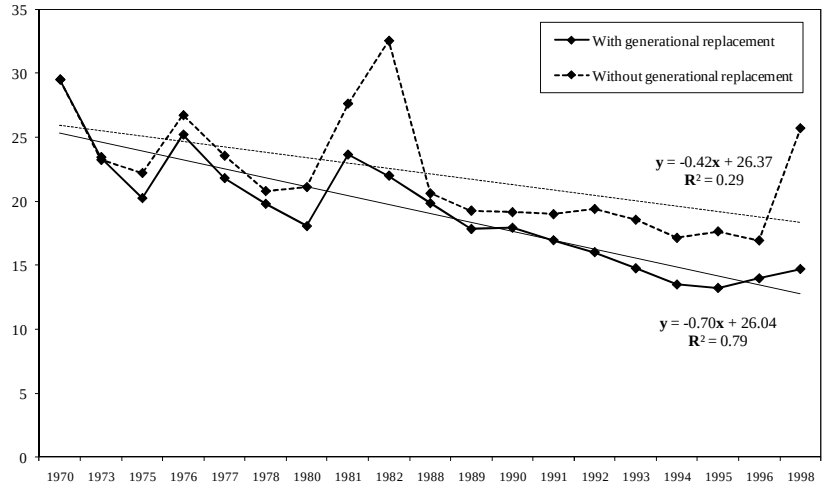
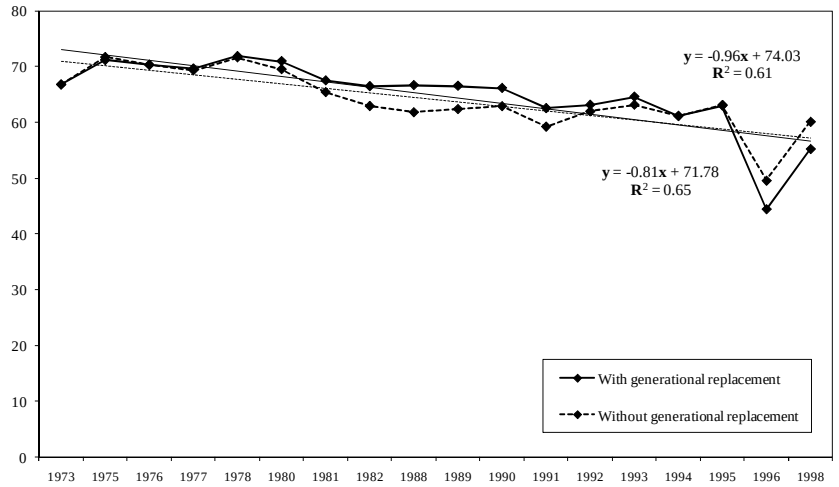
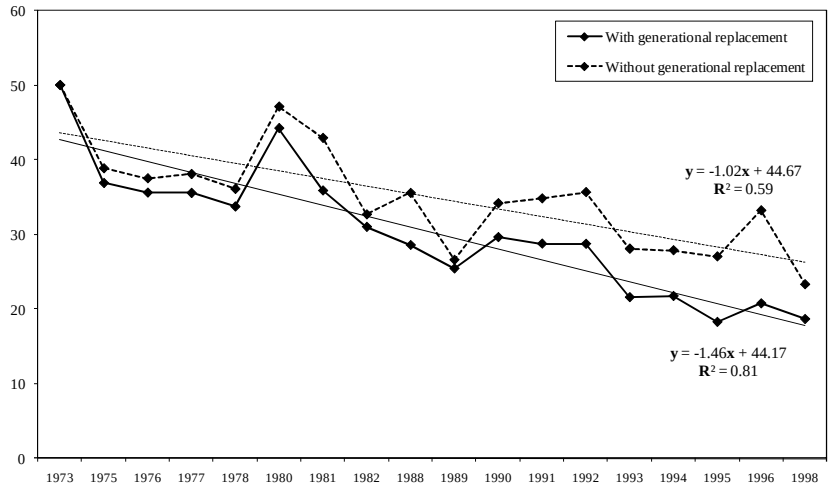


Figure 4.2b Evolution of Church Attendance in Models with Cohort Replacement and without Cohort Replacement, 1970-1998.

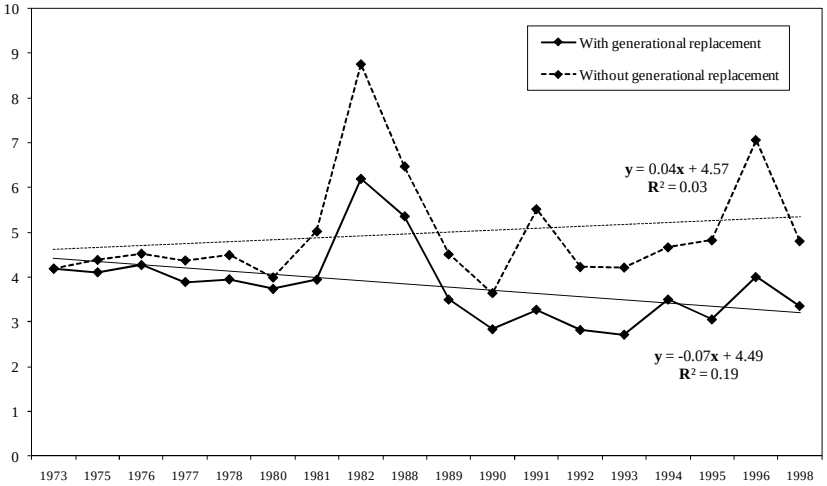
Ireland



Luxembourg



Denmark



Italy

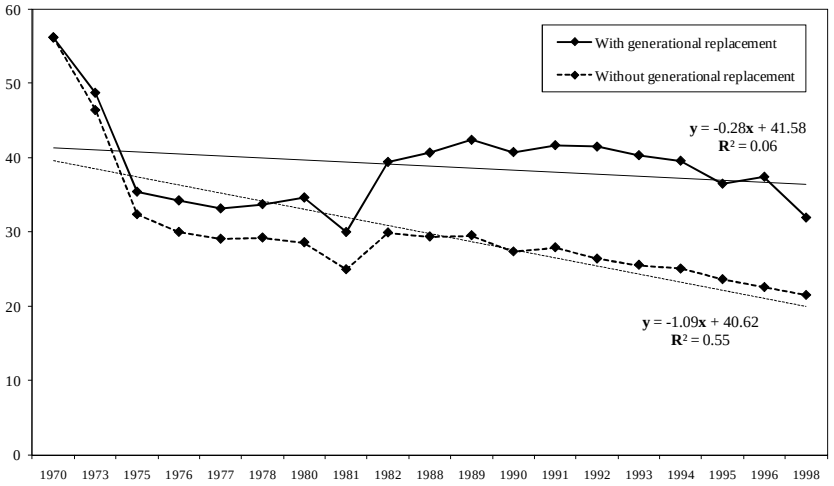


Figure 4.2c Evolution of Church Attendance in Models with Cohort Replacement and without Cohort Replacement, 1970-1998.

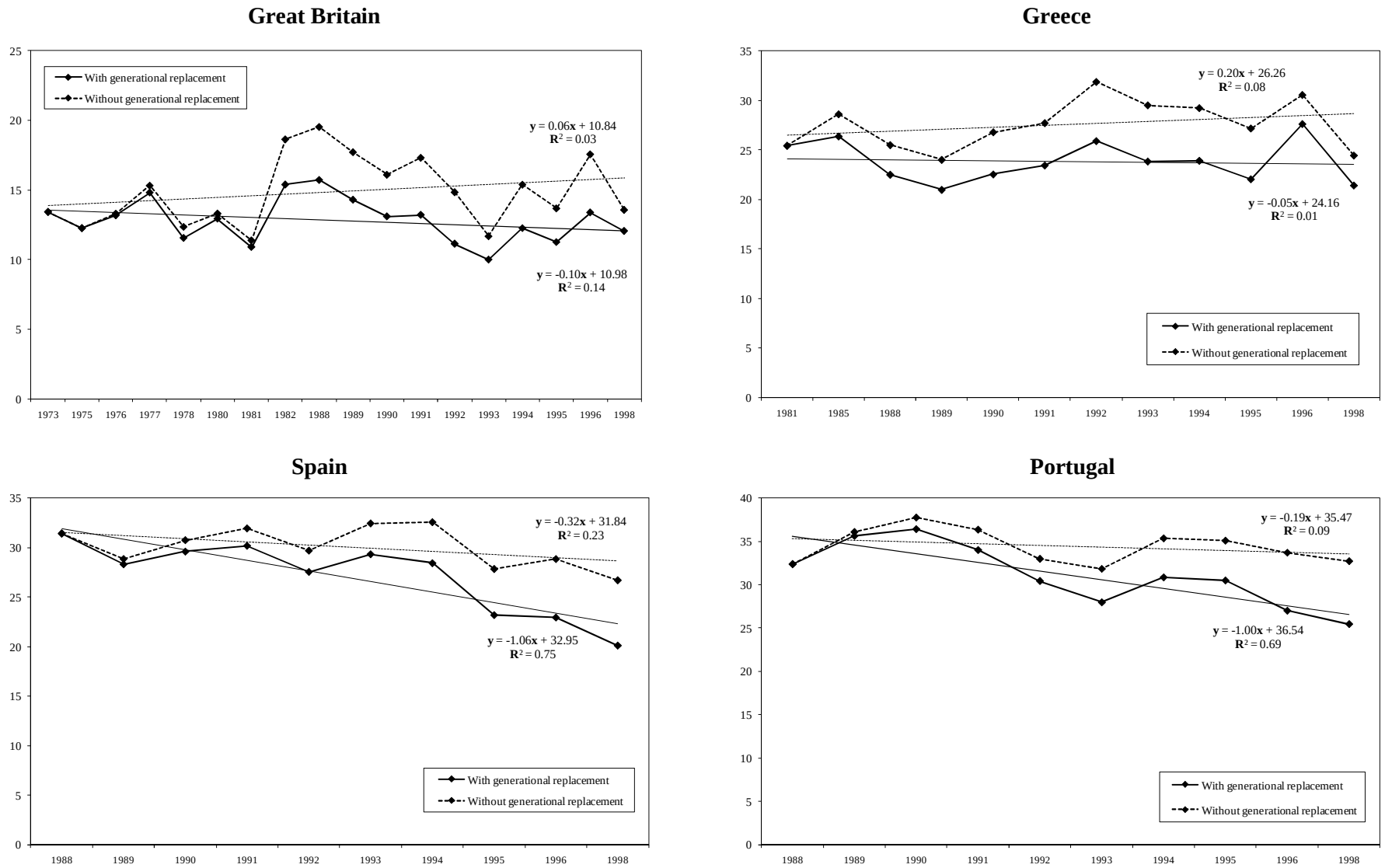


Table 4.2 Comparison of Time Trends in Series with and without Cohort Replacement.

	Series with replacement			Series without replacement			Diff. Slope Coeff.	
	Slope	Intercept	R-sq.	Slope'	Intercept'	R-sq.'	z [a]	p-value
Belgium	-1.95	44.06	0.93	-1.40	45.58	0.82	-2.70	0.00
Denmark	-0.07	4.49	0.19	0.04	4.57	0.03	-1.66	0.05
France	-0.87	20.53	0.92	-0.74	21.93	0.89	-1.52	0.07
Great Britain	-0.10	10.98	0.14	0.06	10.84	0.03	-1.52	0.07
Greece	-0.05	24.16	0.01	0.20	26.26	0.08	-0.91	0.18
Ireland	-0.96	74.03	0.61	-0.81	71.78	0.65	-0.62	0.27
Italy	-0.28	41.58	0.06	-1.09	40.62	0.55	2.32	0.01
Luxembourg	-1.46	44.17	0.81	-1.02	44.67	0.59	-1.60	0.05
Portugal	-1.00	36.54	0.69	-0.19	35.47	0.09	-2.48	0.01
Spain	-1.06	32.95	0.75	-0.32	31.84	0.23	-2.46	0.01
The Netherlands	-1.09	32.13	0.88	-0.72	32.89	0.80	-2.79	0.00
West Germany	-0.70	26.04	0.79	-0.42	26.37	0.29	-1.49	0.07
Mean	-0.80	32.64	0.57	-0.53	32.74	0.42		
|Mean|	0.80			0.58				
SD	0.59	18.08	0.36	0.51	17.51	0.33		
Max.	1.95	74.03	0.93	1.40	71.78	0.89		
Min.	0.05	4.49	0.01	0.04	4.57	0.03		
Correlations								
Slope - Slope'	0.73							
R-sq. - R-sq.'	0.63							
Slope - Intercept	-0.56							
Slope' - Intercept'	-0.65							

Note: (a) To test the equality of regression coefficients I calculated the z using the formula $z = \frac{b_1 - b_2}{\sqrt{SE_1^{\,2} - SE_2^{\,2}}}$ following Clogg et al. (1995) and Paternoster et al. (1998).

Table 4.3 Comparison of the Predicted Values' Decrease between Models with and without Cohort Replacement and Percent Contribution of Intra-cohort Change.

	Decrease with replacement	Decrease without replacement	Intra-cohort change
Belgium	37.1	26.6	71.8%
Denmark	1.2	0.7	na
France	16.5	14.1	85.1%
Great Britain	1.7	1.0	60.0%
Greece	0.6	2.2	na
Ireland	16.3	13.8	84.4%
Italy	5.3	20.7	na
Luxembourg	24.8	17.3	69.9%
Portugal	9.0	1.7	19.0%
Spain	9.5	2.9	30.2%
The Netherlands	20.7	13.7	66.1%
West Germany	13.3	8.0	60.0%

The Belgian Case

I focus on the study of the Belgian case because its overall decrease in church attendance is especially acute, and it also has a long time series of observations. It departs from 1973 with almost half the population admitting going to church at least once a week, and finishes the series with just 10% of regular churchgoers. The average assistance to religious services was 29 times per year in 1973, and just 8 times in 1998. This case looks like another one where generational replacement alone would not be sufficient to explain the overall changes over the period of observations. The rate of change is the highest of all countries contained in the Eurobarometer Trend File: a reduction of -1.89 per year. The decrease in the series without generational replacement is also the steepest (-1.40). If we compare the contribution of within-cohort change to that produced by cohort replacement following Abramson and Inglehart's method, intra-cohort change is as big as 71.8%.

All the evidences indicate that Belgium is a paradigm of within-cohort changes. It is a case in which the large decrease in church attendance may have come in a great deal from period effects or self-actualization of behaviors and dispositions, and not only

from cohort replacement. Moreover, this case has the advantage of allowing the application of the most appropriate techniques to the date to distinguish among age, period and cohort effects. The available repeated cross-section time-series data for this country is long enough to use the hierarchical age-period-cohort cross-classified random effects models (HAPC CCREM) suggested by Yang and Land (2006) as the best methodological solution in recognition of the multilevel structure of the data and to solve the APC dilemma[33]. The HAPC CCREM is useful to assess the relative importance of the two contexts, cohort and period, in understanding individual differences in church attendance while concurrently controlling for age effects.

Data and Method

I use the Eurobarometer Trend File which employs representative samples of the Belgian population from 1973 to 1998. Following Schwadel (2010a) respondents born before 1900 and after 1985 are deleted from the sample due to their small amount. The resulting sample size is then of 49,059 individuals. The level-2 units of analysis are cohort-by-period cells. Each survey year is a separate period (k=18), and three different types of cohort-groups have been defined. The reason for defining three cohort types is that the different grouping yields different results; therefore I wanted to take all of them into consideration for discussion. The first cohort type replicates Yang and Land (2006) 5-year cohort units (j=16): 1901-05, 1906-10, 1911-15, 1916-20, 1921-25, 1926-30, 1931-35, 1936-40, 1941-45, 1946-50, 1951-55, 1956-60, 1961-65, 1966-70, 1971-75, and 1976-80. The second is an approximately 10-year cohort units (j=9): born until 1905, 1906-15, 1916-25, 1926-35, 1936-45, 1946-54, 1955-64, 1965-74 and from 1975 onwards. And the third (j=6) clusters the older cohorts in a wide age-interval generation, while the rest is grouped in 10-year cohorts: Until 1939, 1940-49, 1950-59, 1960-69, 1970-79, 1980-89. This last procedure is done for substantive reasons: the similarities among these individuals; as well as for preserving sufficient sample size in each cohort-group. Tables 4.4, 4.5, and 4.6, show the amount of cases in each year-by-cohort cell for cohort types j=16, j=9, and j=6.

[33] However, according to Harding (2009), HAPC CCREM does not resolve the age-period-cohort identification problem but avoids it by estimating fixed additive effects for age and relying on random effects for periods and cohorts.

Table 4.4 Two-Way Cross-Classified Data Structure of the EB Trend File: Number of Observations in Each Cohort-by-Period Cell, j=16.

	Year (*k*)																		
Cohort (*j*)	1973	1975	1976	1977	1978	1980	1981	1985	1988	1989	1990	1991	1992	1993	1994	1995	1996	1998	Total
1905	117	127	106	102	148	64	55	29	17	23	24	12	13	5	4	6	0	2	854
1910	101	172	117	117	176	105	112	68	53	38	44	30	48	39	20	36	17	11	1304
1915	88	164	150	139	196	144	119	95	55	121	96	83	113	93	83	98	47	30	1914
1920	88	148	103	100	164	104	100	135	93	185	110	96	134	116	122	195	97	81	2171
1925	85	198	165	153	237	146	130	160	173	352	238	227	234	147	150	206	135	151	3287
1930	90	228	180	182	227	162	133	135	174	273	213	214	303	207	196	321	160	161	3559
1935	98	222	150	154	270	156	134	155	102	331	223	227	284	199	194	346	200	213	3658
1940	106	184	171	170	249	136	182	146	173	283	185	191	300	220	215	372	247	188	3718
1945	82	199	169	155	236	158	125	127	170	297	253	199	253	211	196	323	212	211	3576
1950	93	241	178	175	287	188	176	189	160	327	242	272	350	236	260	379	226	238	4217
1955	114	260	228	188	286	189	174	201	143	336	233	237	299	249	235	398	254	233	4257
1960	75	252	214	249	338	205	213	183	201	341	301	280	361	253	269	426	267	292	4720
1965	0	0	3	30	122	200	184	260	248	443	267	287	375	284	288	487	286	264	4028
1970	0	0	0	0	0	0	22	127	188	437	294	312	415	307	265	468	288	286	3409
1975	0	0	0	0	0	0	0	0	84	234	277	308	422	284	280	490	330	292	3001
1980	0	0	0	0	0	0	0	0	0	0	0	21	96	149	222	448	211	239	1386
Total	1137	2395	1934	1914	2936	1957	1859	2010	2034	4021	3000	2996	4000	2999	2999	4999	2977	2892	49059

Table 4.5 Two-Way Cross-Classified Data Structure of the EB Trend File: Number of Observations in Each Cohort-by-Period Cell, *j*=9.

	Year (*k*)																		
Cohort (*j*)	1973	1975	1976	1977	1978	1980	1981	1985	1988	1989	1990	1991	1992	1993	1994	1995	1996	1998	Total
Until 1905	117	127	106	102	148	64	55	29	17	23	24	12	13	5	4	6	0	2	854
1906-15	189	336	267	256	372	248	231	163	108	159	140	113	161	132	103	134	64	41	3217
1916-25	173	345	268	253	402	250	231	295	266	537	348	323	368	262	271	402	232	232	5458
1926-35	188	449	330	335	497	318	267	291	276	604	436	441	586	405	391	667	360	374	7215
1936-45	187	384	340	325	484	294	307	274	343	580	438	390	553	432	411	694	460	399	7295
1946-54	177	456	344	304	490	342	317	360	285	590	420	470	575	437	431	674	435	425	7532
1955-64	105	298	278	338	543	412	397	440	406	767	574	541	731	541	554	889	543	548	8905
1965-74	0	0	0	0	0	29	54	160	333	760	589	648	853	579	568	998	606	578	6755
From 1975	0	0	0	0	0	0	0	0	0	0	32	58	161	205	267	536	278	294	1831
Total	1136	2395	1933	1913	2936	1957	1859	2012	2034	4020	3001	2996	4001	2998	3000	5000	2978	2893	49062

Table 4.6 Two-Way Cross-Classified Data Structure of the EB Trend File: Number of Observations in Each Cohort-by-Period Cell, *j*=6.

	Year (*k*)																		
Cohort (*j*)	1973	1975	1976	1977	1978	1980	1981	1985	1988	1989	1990	1991	1992	1993	1994	1995	1996	1998	Total
Until 1939	414	646	509	486	728	437	423	352	267	442	322	257	338	274	257	387	206	146	6891
1940-49	180	442	340	342	499	325	263	303	324	612	442	458	559	373	356	552	301	331	7002
1950-59	190	387	324	315	482	278	302	297	284	595	404	397	563	422	409	704	474	390	7217
1960-69	175	453	352	334	523	349	309	323	326	645	498	496	617	452	462	731	405	462	7912
1970-79	177	465	409	432	627	413	394	424	341	694	545	518	669	513	508	837	543	535	9044
1980-89	0	0	0	5	79	156	167	312	445	884	571	621	823	582	562	958	586	554	7305
Total	1136	2393	1934	1914	2938	1958	1858	2011	1987	3872	2782	2747	3569	2616	2554	4169	2515	2418	45371

The dependent variable is transformed with respect to the original one following a similar procedure to that proposed by Schwadel (2010a) to obtain the estimated number of days of religious service attendance. In the original question respondents are asked how often they attend religious services (several times a week, once a week, few times a year, once a year, and never). I recode the categorical variable into a continuous one that measures days attending religious services per year. This new variable ranges from 0 to 102, being zero never attending, 1 for once a year, 5 for few times a year, 52 for once a week, and 102 for a downward estimation of several times a week. By doing this transformation, the dependent variable becomes more in accordance with the assumptions of linear regression (Schwadel 2010a). The results are similar to those using the original categorical variable (not shown).

The control variables employed in the analysis are age, sex, marital status, and educational attainment. Age is taken into consideration as age in years. Age is considered in the models both because is a way to control for APC effects, and because the literature mentions a church attendance increase with age (Stark and Bainbridge 1987, Dobbelaere 2002, Sherkat and Ellison 1999 among others). The models also include age squared, as some authors suggest a non-linear effect of age (Hout and Greely 1987, Schwadel 2010a). Sex is incorporated as dichotomous: being male. The literature points to men practicing less than women (Gee 1991). With respect to the effects of marital status, included as dichotomous, being married can have a positive relation to church going[34]. Educational attainment is introduced in the form of the number of years the respondent stayed in the educational system. This is a recode of the original variable which is categorical. Religious denomination is not included given that Belgium is a Catholic country, with a minority of just 1% of Protestants. Other possible relevant control variables such as income or children in the household would have been included in the model, but they are totally or partially absent from the dataset. Snijders and Bosker (1999) show that in hierarchical models in which only the intercept but not the slopes are random at level-1 the three possibilities with respect to centering (non-centering, grand-mean centering, within-group centering) lead to models which are statistically equivalent. In accordance with Yang and Land (2006), I choose not to center the variables in the models without random slopes, in the absence of methodological guidelines that privilege one of the three alternatives.

[34] The causal effect cannot be assessed, however, since the data is not panel but cross-section in nature.

In recognition of the multilevel structure of the data, I use linear CCREMs to analyze age, period, and cohort effects on religious service attendance. I present six different models, each one performed for the three types of cohort-groups (j=16, j=9, and j=6). Where, within each birth cohort j and survey year k, respondent i's church attendance is modeled as a function of each independent variable.

For $i = 1, 2, \ldots, njk$ individuals within cohort j and period k;

$j = 1, \ldots, 16$ birth cohorts; $j = 1, \ldots, 9$ birth cohorts; $j = 1, \ldots, 6$ birth cohorts;

$k = 1, \ldots, 18$ time periods (survey years);

The first model (1) is the empty model. It includes no level-1 fixed effects, so it captures the net overall variation in the intercepts due both to periods and cohorts. Model 2 includes age fixed effects only. Model 3 adds age-square to test the improvement in the model when a potential non-linearity of age effects is taken into account. Model 4 excludes age-square but adds the rest of independent variables: sex, marital status, and educational attainment. Model 5 adds to model 4 the curvilinear age-effect. In addition to providing random cohort and period effects, CCREMs allow for random effects of independent variables, which I use to test for across-cohort and across-period variation in the effects of education. Model 6 includes random slopes for the effect of education on church attendance, while all independent variables are entered in mean-centered format. The results of this last model finally are not presented as they do not contribute to a better explanation of the dependent variable. To ensure that across-cohort changes do not reflect age variations in the effects of independent variables, Schwadel (2010a) added interaction terms between age and the other regressors. I do not consider it to be an issue in my analysis; therefore I do not take it into consideration.

Here I present the formulae of the different models (equations 1.1 to 6.3). Each individual (i) is nested in a birth cohort (j) and a period (k), β_{0jk} is the intercept or cell mean for respondents in cohort j and period k, β_1 through β_5 are the individual-level fixed effects for level-1 independent variables, and e_{ijk} is the individual-level error term. In level-2 equations, γ_0 is the model intercept, which is the overall mean of service attendance, and u_{0j} and v_{0k} are the residual random effects of cohort and period, respectively. The cell mean (β_{0jk}) is equal to the sum of the overall mean intercept (γ_0),

the residual random effect of cohort *j* (u_{0j}), and the residual random effect of period *k* (v_{0k}). Using these residual random effects, I examine the effect of each cohort (averaged across all periods) and the effect of each period (averaged across all cohorts) on religious service attendance.

Level-1 or "Within-Cell" model; Level-2 or "Between-Cell" model:

Model 1

Level-1: $$Y_{ijk} = \beta_{0jk} + e_{ijk} \qquad e_{ijk} \approx N(0, \sigma^2) \tag{1.1}$$

Level-2: $$\beta_{0jk} = \gamma_0 + u_{0j} + v_{0k} \qquad u_{0j} \approx N(0, \tau_u), v_{0k} \approx (0, \tau_v) \tag{1.2}$$

Combined: $$Y_{ijk} = \gamma_0 + u_{0j} + v_{0k} + e_{ijk} \tag{1.3}$$

Model 2

Level-1: $$Y_{ijk} = \beta_{0jk} + \beta_1 AGE_{ijk} + e_{ijk} \qquad e_{ijk} \approx N(0, \sigma^2) \tag{2.1}$$

Level-2: $$\beta_{0jk} = \gamma_0 + u_{0j} + v_{0k} \qquad u_{0j} \approx N(0, \tau_u), v_{0k} \approx (0, \tau_v) \tag{2.2}$$

Combined: $$Y_{ijk} = \gamma_0 + \beta_1 AGE_{ijk} + u_{0j} + v_{0k} + e_{ijk} \tag{2.3}$$

Model 3

Level-1: $$Y_{ijk} = \beta_{0jk} + \beta_1 AGE_{ijk} + \beta_2 AGE^2{}_{ijk} + e_{ijk} \qquad e_{ijk} \approx N(0, \sigma^2) \tag{3.1}$$

Level-2: $$\beta_{0jk} = \gamma_0 + u_{0j} + v_{0k} \qquad u_{0j} \approx N(0, \tau_u), v_{0k} \approx (0, \tau_v) \tag{3.2}$$

Combined: $$Y_{ijk} = \gamma_0 + \beta_1 AGE_{ijk} + \beta_2 AGE^2{}_{ijk} + u_{0j} + v_{0k} + e_{ijk} \tag{3.3}$$

Model 4

Level-1: $$Y_{ijk} = \beta_{0jk} + \beta_1 AGE_{ijk} + \beta_3 MALE + \beta_4 MARRIED_{ijk} + \beta_5 EDU_{ijk} + e_{ijk} \qquad e_{ijk} \approx N(0, \sigma^2) \tag{4.1}$$

Level-2: $$\beta_{0jk} = \gamma_0 + u_{0j} + v_{0k} \qquad u_{0j} \approx N(0, \tau_u), v_{0k} \approx (0, \tau_v) \tag{4.2}$$

Combined: $$Y_{ijk} = \gamma_0 + \beta_1 AGE_{ijk} + \beta_3 MALE + \beta_4 MARRIED_{ijk} + \beta_5 EDU_{ijk} + u_{0j} + v_{0k} + e_{ijk} \tag{4.3}$$

Model 5

Level-1: $$Y_{ijk} = \beta_{0jk} + \beta_1 AGE_{ijk} + \beta_2 AGE^2{}_{ijk} + \beta_3 MALE + \beta_4 MARRIED_{ijk} + \beta_5 EDU_{ijk} + e_{ijk} \qquad e_{ijk} \approx N(0, \sigma^2) \quad (5.1)$$

Level-2: $$\beta_{0jk} = \gamma_0 + u_{0j} + v_{0k} \qquad u_{0j} \approx N(0, \tau_u), v_{0k} \approx (0, \tau_v) \quad (5.2)$$

Combined: $$Y_{ijk} = \gamma_0 + \beta_1 AGE_{ijk} + \beta_2 AGE^2{}_{ijk} + \beta_3 MALE + \beta_4 MARRIED_{ijk} + \beta_5 EDU_{ijk} + u_{0j} + v_{0k} + e_{ijk} \quad (5.3)$$

Model 6

Level 1: $$Y_{ijk} = \beta_{0jk} + \beta_1 AGE_{ijk} + \beta_2 AGE^2{}_{ijk} + \beta_3 MALE + \beta_4 MARRIED_{ijk} + \beta_5 EDU_{ijk} + e_{ijk} \qquad e_{ijk} \approx N(0, \sigma^2) \quad (6.1)$$

Level 2: $$\beta_{0jk} = \gamma_0 + u_{0j} + v_{0k} \qquad u_{0j} \approx N(0, \tau_u), v_{0k} \approx (0, \tau_v) \quad (6.2)$$

$$\beta_{5jk} = \gamma_5 + u_{5j} + v_{5k} \qquad u_{5j} \approx N(0, \tau_u), v_{5k} \approx (0, \tau_v)$$

Combined: $$Y_{ijk} = \gamma_0 + \beta_1 AGE_{ijk} + \beta_2 AGE^2{}_{ijk} + \beta_3 MALE + \beta_4 MARRIED_{ijk} + \gamma_5 EDU_{ijk} + u_{5j} EDU_{ijk} + v_{5k} EDU_{ijk} + u_{0j} + v_{0k} + e_{ijk} \quad (6.3)$$

Equations (6.1) to (6.3) test for random effects of education attainment, where γ_5 is the fixed effects coefficient for educational attainment and u_{5j} is the cohort-specific effect of education, and v_{5k} the period-specific one. The outcomes of these models are not presented, as they are found not to be relevant enough: no individual random-coefficient for education is significantly different from zero.

Results

Hierarchical regression results are reported on tables 4.7, 4.8 and 4.9; where I present three different tables based on the three different types of cohort-groups. The fixed-effects coefficients are interpreted in a manner similar to ordinary least square coefficients. The individual random coefficients for period and cohort provide information about how many standard deviations above or under the overall mean is each particular period or cohort. I start with model 1 which only indicates the overall

impact of period and cohort on religious service attendance. It can be seen by looking at the random coefficients that service attendance varies meaningfully by each cohort and period. In model 2, age shows to have a significant positive effect when it is introduced as a linear regressor. The older the person, the higher his/her expected church attendance. After adding age-square, the linear effect becomes negative, but the exponential is positive. To better grasp what this means, it is better to look at predicted values of model 3 for age effects in figures 4.3, 4.4 and 4.5. It shows a decrease in church attendance until the mid-life, but a dramatic increase at more advanced stages of life. In j=6 the effect of age is smaller in all models, as it seems that the different width of cohort intervals absorbs age effects. The fixed effect of the rest of regressors is quite homogeneous irrespective of the width of cohorts (j=16, j=9, and j=6). When sex, marital status and educational attainment are taken into consideration, the amount of variance explained clearly improves with respect to the null model and age-only models (1, 2 and 3), providing a much better explanation of churchgoing. As expected, male respondents go less to church across all periods and cohorts; three times less than women, irrespective of the age-width of generations. Each additional year of education reduces church attendance by about 0.5 in models 5, this being also in accordance with the literature. It has been tested whether the model is improved by setting random the coefficient of education (model 6 not shown), but it appears not to be the case. The effects of education are similar across periods and cohorts. Marital status can be disregarded as predictor because it does not reach the minimum level of significance. Nevertheless, the sign of the coefficient is positive as expected, implying that being married would be related to churchgoing.

Table 4.7 Linear, Cross-Classified Random-Effects Age-Period-Cohort Models of Church Attendance in Belgium (*j*=16), 1973-1998.

	Model 1		Model 2		Model 3		Model 4		Model 5	
Parameter	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Fixed Effects										
Intercept	21.331 ***	1.873	10.032 ***	1.927	24.617 ***	2.671	-10.049 ***	2.659	4.207	3.210
Age			0.248 ***	0.026	-0.504 ***	0.082	0.298 ***	0.031	-0.521 ***	0.088
Age²					0.008 ***	0.001			0.009 ***	0.001
Male							-2.827 ***	0.360	-2.918 ***	0.360
Married							-1.757 ***	0.404	-0.468	0.424
Education							1.202 ***	0.076	1.253 ***	0.076
Random Effects										
Period										
1973	4.090 ***	1.279	7.243 ***	1.640	7.233 ***	1.651	8.370 ***	1.846	8.341 ***	1.845
1975	3.803 ***	1.356	6.518 ***	1.696	6.608 ***	1.699	7.430 ***	1.892	7.515 ***	1.885
1976	3.613 ***	1.193	6.050 ***	1.561	6.035 ***	1.561	6.506 ***	1.771	6.457 ***	1.761
1977	6.795 ***	1.200	9.049 ***	1.563	9.017 ***	1.561	9.710 ***	1.772	9.660 ***	1.759
1978	4.729 ***	1.185	6.704 ***	1.549	6.594 ***	1.543	7.226 ***	1.758	7.075 ***	1.743
1980	1.362	1.357	2.819 *	1.685	2.696	1.674	3.249 *	1.877	3.096 *	1.858
1981	3.240 **	1.373	4.519 ***	1.696	4.502 ***	1.684	4.913 ***	1.889	4.821 ***	1.868
1985	-3.726 ***	1.263	-3.563 **	1.601	-3.755 **	1.584	-3.623 **	1.801	-3.811 **	1.777
1988	-0.604	1.354	-1.067	1.678	-1.183	1.662	-2.179	1.870	-2.269	1.848
1989	-0.187	1.138	-0.884	1.503	-0.924	1.487	-1.671	1.716	-1.687	1.693
1990	-0.780	1.137	-1.715	1.504	-1.654	1.489	-2.626	1.719	-2.656	1.698
1991	-2.942 ***	1.133	-4.166 ***	1.502	-4.027 ***	1.488	-5.325 ***	1.717	-5.228 ***	1.697
1992	-1.949	1.196	-3.373 **	1.553	-3.373 **	1.541	-4.448 **	1.762	-4.476 **	1.745
1993	-1.189	1.199	-2.806 *	1.556	-2.773 *	1.547	-4.559 **	1.771	-4.174 **	1.755
1994	-3.310 ***	1.136	-5.146 ***	1.510	-5.202 ***	1.503	-6.419 ***	1.728	-6.505 ***	1.714
1995	-4.232 ***	1.351	-6.350 ***	1.684	-6.302 ***	1.680	0.000	6.655	0.000	6.549
1996	1.270	1.600	-0.900	1.910	-1.147	1.907	-2.199	2.088	-2.465	2.079
1998	-9.982 ***	1.282	-12.933 ***	1.636	-12.343 ***	1.642	-14.355 ***	1.846	-13.694 ***	1.846
Cohort										
1905	3.752 *	1.963	-4.055 ***	1.388	-7.320 ***	1.805	-4.807 ***	1.562	-8.035 ***	1.937
1910	8.523 ***	1.847	0.654	1.252	-1.262	1.618	0.613	1.408	-1.377	1.738
1915	8.235 ***	1.766	1.411	1.123	0.284	1.446	1.713	1.261	0.525	1.554
1920	7.263 ***	1.753	1.688	1.048	1.613	1.325	2.061 *	1.172	2.003	1.424
1925	6.895 ***	1.703	2.444 ***	0.931	3.545 ***	1.187	2.811 ***	1.041	3.925 ***	1.277
1930	6.854 ***	1.695	3.556 ***	0.870	5.565 ***	1.112	3.898 ***	0.971	5.918 ***	1.195
1935	2.564	1.694	0.668	0.834	3.169 ***	1.071	1.211	0.928	3.726 ***	1.148
1940	0.881	1.692	0.256	0.812	2.993 ***	1.048	0.591	0.905	3.288 ***	1.122
1945	-2.749	1.695	-1.966 **	0.818	0.571	1.051	-2.193 **	0.910	0.298	1.125
1950	-4.027 **	1.684	-2.054 **	0.817	-0.047	1.052	-2.171 **	0.914	-0.246	1.129
1955	-4.936 ***	1.687	-1.736 **	0.857	-0.654	1.097	-2.303 **	0.964	-1.331	1.183
1960	-4.409 ***	1.681	-0.139	0.897	-0.169	1.156	-0.481	1.013	-0.566	1.250
1965	-7.111 ***	1.709	-1.519	0.993	-1.909	1.278	-2.262 **	1.123	-2.743 **	1.385
1970	-8.866 ***	1.731	-2.020 *	1.081	-3.423 **	1.404	-2.595 **	1.229	-3.883 **	1.522
1975	-6.940 ***	1.777	0.762	1.190	-1.910	1.561	1.011	1.362	-1.493	1.695
1980	-5.930 ***	2.052	2.051	1.437	-1.048	1.851	2.902 *	1.655	-0.011	2.022
Variance Components										
Period	17.375 ***	6.211	34.596 ***	12.289	33.674 ***	12.175	44.290 ***	16.161	42.887 ***	15.866
Cohort	39.929 ***	14.859	5.028 **	2.254	10.621 ***	4.539	7.125 **	3.082	12.874 ***	5.341
Individual	682.170 ***	6.490	681.980 ***	6.488	678.730 ***	6.457	677.290 ***	6.564	673.880 ***	6.531
Intraclass correlation										
Period	2.3 %		4.8 %		4.7 %		6.1 %		5.9 %	
Cohort	5.4 %		0.7 %		1.5 %		1.0 %		1.8 %	
Model Fit										
Deviance	207356.9		207337.0		207251.9		199704.2		199615.1	
Number of parameters	4		5		6		8		9	
χ^2 Model improvement			19.9 ***		105.0 ***		7652.7 ***		7741.8 ***	
AIC	207362.9		207343.0		207257.9		199710.2		199621.1	

*p ≤ 0.1, **p ≤ 0.05, ***p ≤ 0.01 (two-tailed test).

Table 4.8 Linear, Cross-Classified Random-Effects Age-Period-Cohort Models of Church Attendance in Belgium (*j*=9), 1973-1998.

	Model 1		Model 2		Model 3		Model 4		Model 5	
Parameter	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Fixed Effects										
Intercept	21.220 ***	2.318	100.364 ***	2.153	23.978 ***	2.983	-9.980 ***	2.872	3.411	3.497
Age			0.244 ***	0.031	-0.513 ***	0.084	0.301 ***	0.035	-0.514 ***	0.090
Age²					0.008 ***	0.001			0.009 ***	0.001
Male							-2.813 ***	0.361	-2.906 ***	0.360
Education							-1.868 ***	0.404	-0.540	0.424
Married							1.184 ***	0.076	1.236 ***	0.076
Random Effects										
Period										
1973	4.147 ***	1.284	7.182 ***	1.647	7.376 ***	1.688	8.392 ***	1.863	8.581 ***	1.892
1975	3.867 ***	1.361	6.479 ***	1.700	6.723 ***	1.730	7.463 ***	1.906	7.711 ***	1.927
1976	3.736 ***	1.199	6.081 ***	1.563	6.241 ***	1.593	6.602 ***	1.784	6.736 ***	1.805
1977	6.946 ***	1.206	9.091 ***	1.564	9.228 ***	1.590	9.814 ***	1.783	9.940 ***	1.800
1978	4.713 ***	1.191	6.641 ***	1.549	6.681 ***	1.573	7.215 ***	1.770	7.219 ***	1.785
1980	1.342	1.363	2.788 *	1.683	2.763	1.698	3.243 *	1.886	3.187 *	1.895
1981	3.331 **	1.378	4.523 ***	1.693	4.569 ***	1.706	4.951 ***	1.896	4.919 ***	1.903
1985	-3.923 ***	1.268	-3.694 **	1.596	-3.878 **	1.605	-3.792 **	1.807	-3.976 **	1.812
1988	-0.671	1.360	-1.101	1.673	-1.248	1.682	-2.255	1.877	-2.393	1.882
1989	-0.298	1.144	-0.935	1.498	-1.011	1.509	-1.737	1.724	-1.803	1.731
1990	-0.845	1.144	-1.726	1.499	-1.718	1.512	-2.652	1.727	-2.752	1.736
1991	-2.983 ***	1.139	-4.141 ***	1.498	-4.074 ***	1.513	-5.315 ***	1.726	-5.312 ***	1.737
1992	-1.951	1.202	-3.334 **	1.550	-3.422 **	1.567	-4.419 **	1.772	-4.554 **	1.784
1993	-1.210	1.205	-2.757 *	1.554	-2.860 *	1.573	-4.570 **	1.781	-4.330 **	1.796
1994	-3.301 ***	1.143	-5.099 ***	1.509	-5.265 ***	1.532	-6.402 ***	1.740	-6.618 ***	1.757
1995	-4.184 ***	1.356	-6.285 ***	1.685	-6.377 ***	1.708	0.000	6.684	0.000	6.711
1996	1.304	1.607	-0.830	1.912	-1.264	1.934	-2.173	2.101	-2.651	2.119
1998	-10.020 ***	1.288	-12.883 ***	1.641	-12.466 ***	1.677	-14.365 ***	1.864	-13.904 ***	1.894
Cohort										
Until 1905	3.811	2.358	-3.962 **	1.566	-7.637 ***	2.137	-4.910 ***	1.780	-8.595 ***	2.279
1906-15	8.523 ***	2.169	1.434	1.298	-0.301	1.801	1.403	1.486	-0.427	1.932
1916-25	7.200 ***	2.140	2.468 **	1.097	3.088 **	1.548	2.720 **	1.261	3.313 **	1.669
1926-35	4.836 **	2.130	2.382 **	0.963	4.873 ***	1.410	2.782 **	1.116	5.227 ***	1.525
1936-45	-0.793	2.129	-0.720	0.917	2.393 *	1.368	-0.610	1.068	2.391	1.481
1946-54	-4.233 **	2.131	-1.842 *	0.964	0.435	1.409	-2.045 *	1.121	0.094	1.525
1955-64	-5.322 **	2.128	-0.766	1.072	-0.209	1.529	-1.110	1.242	-0.610	1.653
1965-74	-7.951 ***	2.149	-1.015	1.267	-2.043	1.771	-1.230	1.463	-2.062	1.907
From 1975	-6.070 ***	2.340	2.021	1.546	-0.599	2.118	2.998 *	1.783	0.669	2.278
Variance Components										
Period	17.632 ***	6.246	34.297 ***	12.22	34.859 ***	12.704	44.675 ***	16.391	45.034 ***	16.762
Cohort	38.965 **	19.639	5.812 **	3.454	14.234 **	7.946	8.329 **	4.844	17.006 **	9.467
Individual	683.590 ***	6.502	682.750 ***	6.494	679.330 ***	6.426	678.260 ***	6.572	674.720 ***	6.538
Intraclass correlation										
Period	2.4 %		4.7 %		4.8 %		6.1 %		6.1 %	
Cohort	5.3 %		0.8 %		2.0 %		1.1 %		2.3 %	
Model Fit										
Deviance	207376.2		207349.4		207256.4		199720.6		199625.8	
Number of parameters	4		5		6		8		9	
χ^2 Model improvement			26.8 ***		119.8 ***		7655.6 ***		7750.4 ***	
AIC	207382.2		207355.4		207262.4		199726.6		199631.8	

*p ≤ 0.1, **p ≤ 0.05, ***p ≤ 0.01 (two-tailed test).

Table 4.9 Linear, Cross-Classified Random-Effects Age-Period-Cohort Models of Church Attendance in Belgium (j=6), 1973-1998.

	Model 1		Model 2		Model 3		Model 4		Model 5	
Parameter	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Fixed Effects										
Intercept	21.085 ***	2.779	14.771 ***	2.796	32.792 ***	3.713	-4.435	3.460	13.149 **	4.263
Age			0.140 ***	0.044	-0.647 ***	0.092	0.163 ***	0.046	-0.681 ***	0.098
Age²					0.007 ***	0.001			0.008 ***	0.001
Male							-3.030 ***	0.372	-3.105 ***	0.371
Education							-1.664 ***	0.411	-0.385	0.431
Married							1.218 ***	0.077	1.262 ***	0.077
Random Effects										
Period										
1973	3.976 ***	1.262	5.723 ***	1.534	4.669 ***	1.430	6.564 ***	1.675	5.514 ***	1.549
1975	3.813 ***	1.341	5.318 ***	1.577	4.520 ***	1.471	6.023 ***	1.712	5.241 ***	1.585
1976	3.589 ***	1.173	4.917 ***	1.421	4.078 ***	1.306	5.173 ***	1.569	4.332 ***	1.432
1977	6.722 ***	1.181	7.969 ***	1.418	7.150 ***	1.301	8.449 ***	1.565	7.648 ***	1.426
1978	4.675 ***	1.166	5.752 ***	1.394	4.971 ***	1.275	6.124 ***	1.543	5.334 ***	1.402
1980	1.365	1.342	2.148	1.534	1.572	1.420	2.485	1.668	1.905	1.535
1981	3.230 **	1.358	3.980 **	1.545	3.574 **	1.431	4.305 **	1.681	3.858 **	1.548
1985	-3.802 ***	1.245	-3.691 ***	1.429	-3.957 ***	1.307	-3.722 **	1.573	-3.951 ***	1.431
1988	-0.536	1.345	-0.781	1.520	-0.710	1.403	-1.740	1.658	-1.590	1.522
1989	-0.272	1.122	-0.642	1.325	-0.413	1.193	-1.234	1.483	-0.930	1.333
1990	-0.729	1.123	-1.246	1.330	-0.823	1.200	-1.966	1.490	-1.584	1.342
1991	-2.951 ***	1.119	-3.625 ***	1.332	-3.063 **	1.204	-4.557 ***	1.493	-3.993 ***	1.346
1992	-1.673	1.194	-2.472 *	1.403	-1.959	1.282	-3.249 **	1.557	-2.713 *	1.416
1993	-1.479	1.203	-2.374 *	1.417	-1.763	1.297	-3.853 **	1.575	-2.812 *	1.438
1994	-3.282 ***	1.131	-4.314 ***	1.363	-3.719 ***	1.240	-5.245 ***	1.525	-4.634 ***	1.383
1995	-3.644 ***	1.379	-4.825 ***	1.587	-4.054 ***	1.478	0.000	5.580	0.000	4.899
1996	0.535	1.652	-0.589	1.848	-0.185	1.744	-1.426	1.972	-0.972	1.853
1998	-9.537 ***	1.306	-11.248 ***	1.557	-9.889 ***	1.454	-12.130 ***	1.707	-10.653 ***	1.585
Cohort										
Until 1939	7.560 ***	2.634	3.696 *	2.009	3.986	2.668	4.680 **	2.352	5.048 *	3.029
1940-49	6.890 ***	2.634	4.863 ***	1.737	6.818 ***	2.445	5.752 ***	2.089	7.774 ***	2.817
1950-59	1.520	2.633	0.891	1.636	3.045	2.370	1.436	1.995	3.557	2.746
1960-69	-3.507	2.631	-2.701 *	1.640	-1.739	2.367	-3.016	1.998	-2.156	2.744
1970-79	-4.611 *	2.630	-2.434	1.753	-4.061 *	2.456	-3.262	2.105	-4.959 *	2.829
1980-89	-7.852 ***	2.642	-4.316 **	1.957	-8.050 ***	2.637	-5.590 **	2.302	-9.264 ***	3.001
Variance Components										
Period	16.424 ***	5.900	25.075 ***	9.860	19.157 ***	7.653	31.136 ***	12.221	24.003 ***	9.590
Cohort	40.608 **	25.809	14.845	12.827	32.190 *	23.639	22.577	17.799	43.678 *	30.931
Individual	695.710 ***	6.785	695.500 ***	6.783	692.660 ***	6.756	687.970 ***	6.822	685.020 ***	6.793
Intraclass correlation										
Period	2.2 %		3.4 %		2.6 %		4.2 %		3.2 %	
Cohort	5.4 %		2.0 %		4.3 %		3.0 %		5.8 %	
Model Fit										
Deviance	197580.8		197579.8		197504.6		190952.7		190875.5	
Number of parameters	4		5		6		8		9	
χ^2 Model improvement			1		76.2 ***		6628.1 ***		6705.3 ***	
AIC	197586.8		197585.8		197510.6		190958.7		190881.5	

*p ≤ 0.1, **p ≤ 0.05, ***p ≤ 0.01 (two-tailed test).

Period and cohort effects are estimated using residual random coefficients (Yang and Land 2006). Figures 4.3, 4.4 and 4.5 summarize the estimated effects of age, period, and cohort on church attendance in the different cohort types. All models show a negative period effect, producing lower predicted values of church attendance as time passes. The decrease is not monotonic; however the complete picture points to a clear a downward trend. This decreasing drift could be modeled with a simple deterministic trend (table 4.10), showing a negative slope that turns steepest as more control variables are added (models 3 and 5). And this happens the same way irrespective of the generation type used. Cohort effects could seem as well quite monotonically negative by looking at the predicted values of the first model in j=16 and j=9. However the shape of the distribution changes when control variables are taken into account. Older cohorts are going less to church in models 3 and 5, and differences between younger cohorts appear less pronounced. This is the case in generation types j=16 and j=9, but not in j=6. Cohort effects in this last case are clearly monotonic and intense: older cohorts going far more to church than younger ones, with weaker age and period effects. Age effects are strong and positive in all models and generation types, except for j=6 recently mention. Therefore, all in all, when age and other control variables are taken into consideration across the different models, the effects of period on church attendance are higher than those of cohort, with the exception of cohort type j=6.

When looking at the random variance components summarized across generation types, period effects seem to explain more variance in church attendance than cohort effects do, except from the models with wider cohort intervals (j=6). The choice of different year of birth intervals for building the cohort types (j=16, 9 or 6) happens to have consequences in the substantive results obtained. With respect to the null model (1), the amount of variance explained by cohort more than doubles that of period's, across all cohort types. The random variance component goes from 17.4 in j=16, to 17.6 in j=9, and 16.4 in j=6. In model 2 for cohort types j=16 and j=9, where age is added, period happens to explain two times more variance than in the empty model, while cohort effects diminish dramatically to almost being irrelevant. In j=6 the reduction of cohort effects and the increase of period effects is not that pronounced, as generation still explains 2% of the total variance. The comparison between model 1 and 2 shows that cohort effects were in fact masking age effects. In model 3, the inclusion of age-square increases cohort effects, thus leaving the amount of variance explained by period effects

relatively stable. Just in the case of *j*=6 period slightly reduces its explanatory power. The amount of variance explained by cohort jumps from 5.0 to 10.6 in *j*=16, 5.8 to 14.2 in *j*=9, and 14.8 to 32.3 in *j*=6. In model 4, that adds the rest of individual level regressors except for age-square, the effect of period increases, and leaves only a tiny portion of explained variance to cohort. Cohort's variance component becomes just 7.1 in *j*=16, 8.3 in *j*=9, and 22.6 in *j*=6; compared to period's variance components of 44.3, 44.7, and 31.1 respectively. Model 5 includes age-square to the rest of regressors. The effect of period remains above that of cohort (and at the same magnitudes and levels), though the latter increases. In *j*=6, cohort is above period (24.0 to 43.7).

Figure 4.3 Predicted Days of Church Attendance per Year across Models, *j*=16.

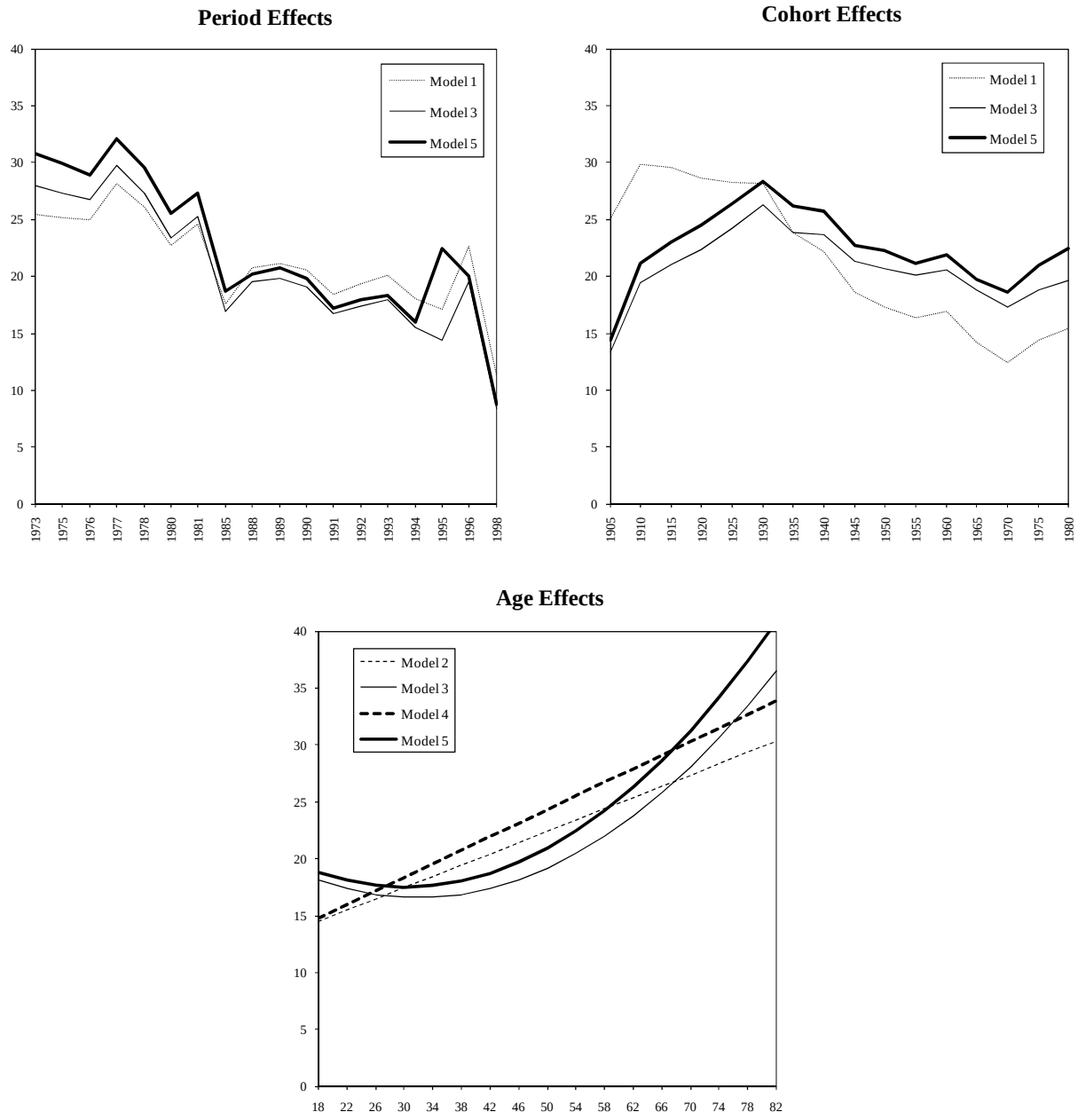


Figure 4.4 Predicted Days of Church Attendance per Year across Models, *j*=9.

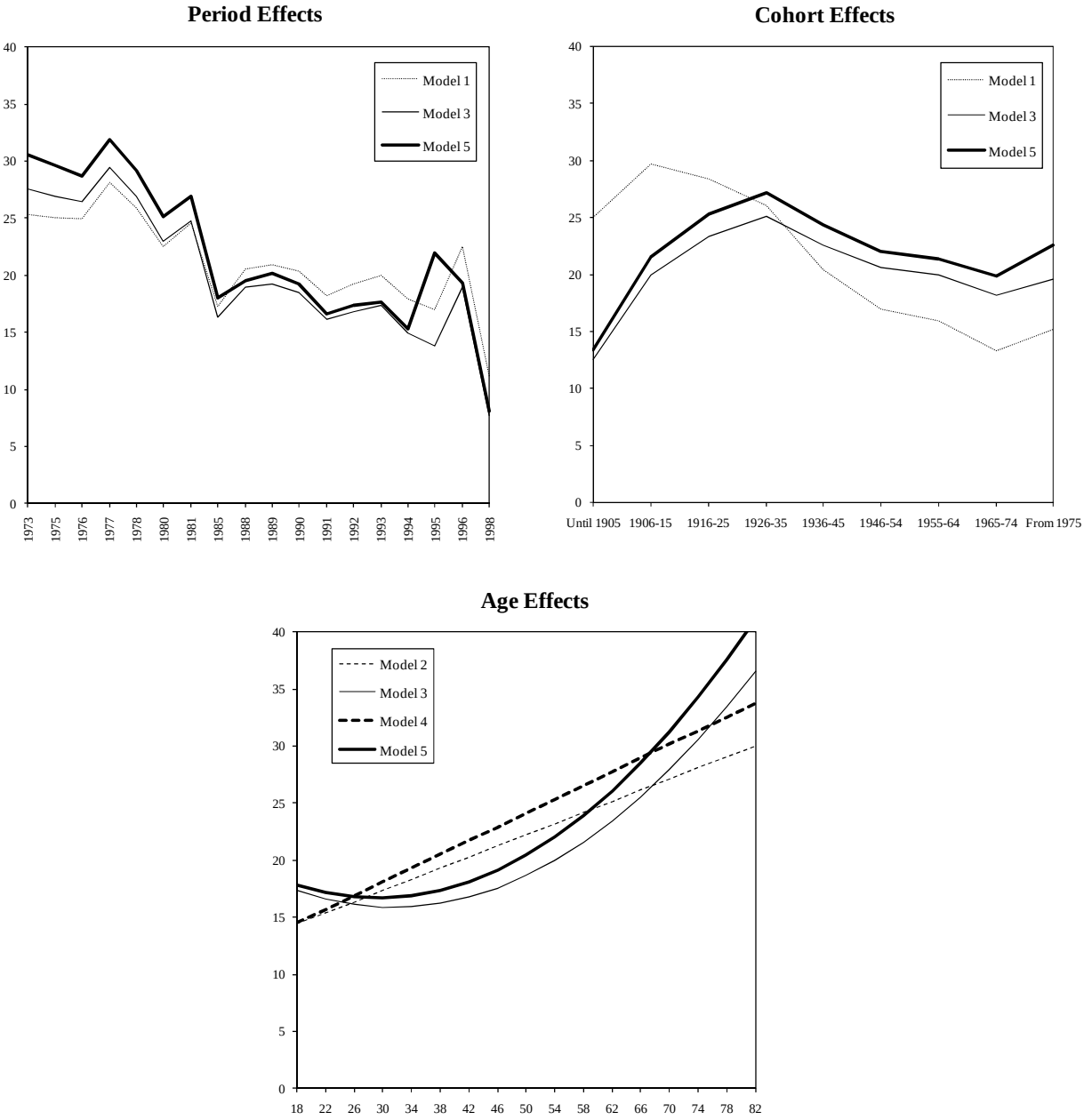


Figure 4.5 Predicted Days of Church Attendance per Year across Models, *j*=6.

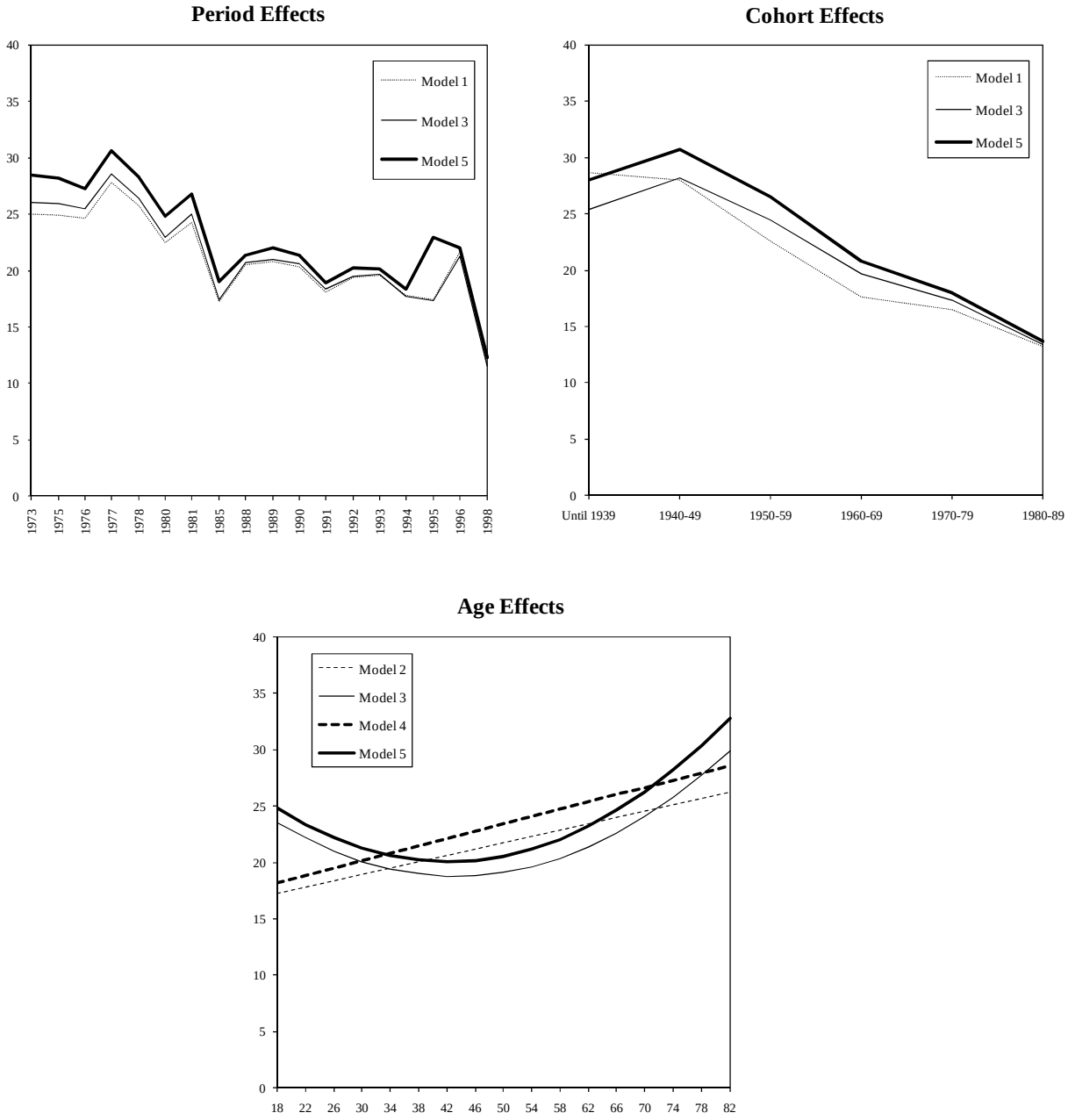


Table 4.10 Comparison of Trends in Predicted Age, Period and Cohort Effects

	Period effects			Cohort effects			Age effects		
	Slope	Intercept	R^2	Slope	Intercept	R^2	Slope	Intercept	R^2
***j* = 16**									
Model 1	-0.61	27.10	0.63	-1.21	31.65	0.85			
Model 2	-0.97	30.37	0.79	-0.04	21.52	0.01	0.99	13.50	
Model 3	-0.96	29.83	0.80	-0.08	21.42	0.01			
Model 4	-1.03	32.64	0.74	-0.05	23.24	0.01	1.19	13.59	
Model 5	-1.02	32.15	0.75	-0.08	23.16	0.01			
***j* = 9**									
Model 1	-0.61	27.04	0.63	-2.05	31.47	0.82			
Model 2	-1.04	32.46	0.74	0.10	20.52	0.01	0.98	13.45	
Model 3	-0.98	29.50	0.80	0.20	19.22	0.02			
Model 4	-0.96	39.15	0.78	0.19	21.70	0.04	1.20	13.31	
Model 5	-1.05	31.88	0.75	0.32	20.36	0.05			
***j* = 6**									
Model 1	-0.60	26.78	0.65	-3.33	32.74	0.96			
Model 2	-0.80	28.65	0.75	-1.88	27.61	0.88	0.56	16.72	
Model 3	-0.67	27.81	0.71	-2.79	31.18	0.87			
Model 4	-0.84	30.59	0.71	-2.37	30.87	0.91	0.65	17.55	
Model 5	-0.72	29.79	0.68	-3.30	34.51	0.89			

Concluding Remarks

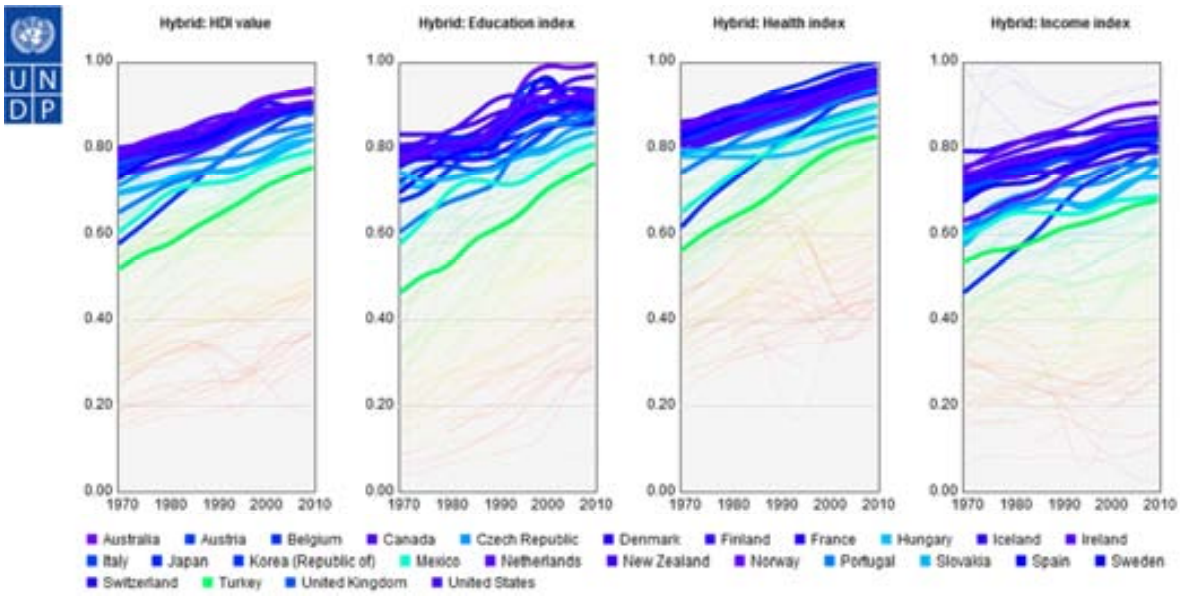
So far I have demonstrated that the enormous decrease in church attendance experienced in Western European countries comes in a great deal from period effects, this is, generations adapting their patterns of behavior to the new contextual conditions year by year. The study of the Belgian case where age, period and cohort effects are simultaneously modeled indicates that period and age effects are far more important than expected. The presence of strong and negative period effects shows that Belgians have ceased going to church on real-time. Positive age effects run in the opposite direction to period and cohort ones. Secularization in its delayed fashion –by cohort replacement– and in its "real-time" version –through period effects– is being slowed down as people become more religious with age. These whole set of findings contradict Norris and Inglehart's assumptions, and constitute a substantive contribution to the debate over age, period and cohort effects on church attendance.

The Importance of Religion in Life

Secularization is also supposed to affect religious values. Here I will study the evolution of the importance of religion in life across 28 OECD countries experiencing societal modernization processes. Norris and Inglehart's (2004) consider the subjective importance that people attribute to religion in their lives to be a religious value, differentiated from religious participation and religious beliefs. In *Sacred and Secular* (2004), they explicitly define values as the "goals that people prioritize for their society, community, families, and themselves". This classification is quite rare in Inglehart's works, more inclined to rely on a vague all-encompassing conception of values. In this case, they seem to follow the classical notion of values that can be found in Rokeach (1973) or Schwartz and Bardi (2001). In fact, measuring values with importance assertions is considered the adequate practice by Saris and Gallhofer (2007). It is a bit beyond the scope of this research to test the consequences of different ways of measuring values. However it has to be kept in mind, that the choice of a particular wording to measure a value may have an influence on its within-cohort stability.

Secularization is thought to lessen the importance of religion in people's life, as well as to produce indifference to spiritual matters, and erode traditional religious practices and identities. According to Inglehart and Norris (2004), religious values are prior to religious practices in the causal chain. Existential security affects religious values, and values in turn influence religious practices. However, religious beliefs and values are thought to be more resistant to change than religious practices (Davie 1994). Although different empirical evidences discard the "believing without belonging" thesis (see Draulans and Halman 2004), Nicolet and Tresch (2009), in their analysis of the Swiss case, point to a certain discrepancy between the evolution of religious practices and actual beliefs. They found that, contrary to the secularization theory, the sharp decline in church attendance and church affiliation does not fully translate into a waning importance of religious beliefs. In line with the religious individualization thesis, many Swiss seem to keep their Christian faith but turn away from the official churches and develop more individualized forms of religiosity instead.

Figure 4.6 HDI's Evolution over the Period of Observations, 28 OECD Countries.



Is secularization also affecting religious values? Are they diminishing at a similar speed to that of church attendance rates? Are also period effects playing such a key role in the process? I am going to explore the role of within-cohort learning in the dynamics of importance of religion over a span of more than twenty years, and across 28 OECD countries. All these nations have experienced societal modernization at some degree during this period of time (see figure 4.6), therefore we can assume a change in the exogenous covariates of values. For the analysis, I am going to use the repeated cross-sectional data of the World Values Surveys. The survey item I employ is located at the beginning of the questionnaire. It is portrayed as one out of six items of a battery about the importance of different spheres in the life of the respondent. The exact wording of the question is as follows:

For each of the following, indicate how important it is in your life. Would you say it is *(read out and code one answer for each) (Show Card A)*

		Very important	Rather important	Not very important	Not at all important
V4.	Family	1	2	3	4
V5.	Friends	1	2	3	4
V6.	Leisure time	1	2	3	4
V7.	Politics	1	2	3	4
V8.	Work	1	2	3	4
V9.	**Religion**	1	2	3	4

(NOTE: Code but do not read out-- here and throughout the interview):
-1 Don't know
-2 No answer
-3 Not applicable

First I perform a descriptive analysis of the evolution of importance of religion over the period of observations and across countries. I study whether there has been any aggregate change in levels at all, and which is the direction of the change in case it has existed. Still at the descriptive stage, I explore how generations have evolved over time in each country by means of cohort graphs. As a by-product of those graphs, I construct summary tables to compare inter and intra-generational variance over time and across countries. Next, I add the explanatory component and perform a set of country-by-country regression analysis where I introduce generations and periods as predictor variables. To better grasp possible non-linearities in their effects, I do not enter them as continuous but as categorical dichotomous variables. In the final step I perform a set of multilevel models to account for the variance across-countries and waves while taking into consideration the nested nature of the data. The individual-level data of the World Values Survey that I am using is nested within countries and waves. There are not enough waves per country to perform cross-classified hierarchical models, therefore I carry out two alternative solutions: 1) nesting individual-level data within countries, and consider period effects as an individual-level predictor variable (results shown in the appendix); 2) nesting individual-level data within country-per-wave units, and consider period effects as a second-level predictor variable together with other country-level time-varying covariates. The first of these two options does not allow simultaneously modeling age, period, and cohort effects, while the second does it by locating period effects as a second-level characteristic. Although this option violates to a certain extent the regression assumption of independence among observations, the other alternative possibilities also violate assumptions and, in addition, do not allow modeling the APC components concurrently. I follow a stepwise procedure, sequentially introducing additional control variables at the individual and country levels to explain the variance in the dependent variable. My purpose is to account for variation at the individual and country levels, as well as over time, while simultaneously decompose age, period and cohort effects introducing a set of control variables. At the static societal level I confront the theory of secularization based on existential security, with the cultural background approach, and the religious market hypothesis. At the dynamic societal level, I test the effects of changes over time in country-level covariates linked to modernization: are countries experiencing faster development quicker in their secularization process? At the individual level I add age, cohort and family formation effects, together with the usual covariates of religiosity.

Main Hypotheses

As commented earlier, Norris and Inglehart's theory of secularization (2004) is focused on generation effects as the main source of decline in religious values. More precisely, their secularization thesis predicts that: 1) religiosity is stronger the older the generation; and 2) the age-related differences tend to be linear, rather than curvilinear. When underlying the importance of generation effects, they explicitly argue: "[..] there is strong evidence that religious values are learned early in life, in the family, school, and community, as part of the primary socialization process, so that the enduring values of different birth cohorts can be attributed mainly to their formative experiences in childhood and adolescence". They adhere to the age-stability hypothesis and basically ignore the possibility of meaningful life-cycle or period effects in their analysis. Conversely, life-cycle effects are quite acknowledged in the rest of the literature on religiosity. Actually, the effects of formative experiences that lead to aggregate change through cohort replacement could be coexisting with aging and period effects. Here I establish a set of hypotheses that will guide my analysis:

H4.1: The overall importance of religion will decrease in these already developed set of countries which are experiencing modernization. This decrease will be operated both by generational effects as well as through period effects, which have in fact a similar nature.

H4.2: Age effects would tend to slow down the decline in importance of religion across cohorts, as people would become more religious when they grow older.

H4.3: In countries experiencing difficulties in the process of modernization or reductions in existential security, the importance of religion can even increase in real-time.

H4.4: Generation, period, and age effects would still be significant even once controlled by composition effects and other contextual factors (country differences), confirming both the importance of socialization during the "impressionable years" as well as the one that takes place all over the lifespan due to life course processes or contextual influences.

Next, I present a more specific set of hypothesis for each of the levels of analysis that I consider in my empirical study.

Individual-level Covariates

As one of the aims of this dissertation is to question the age-stability hypothesis in values and symbolic attitudes, I want to test whether the effects of age and time period still have an impact on the importance people give to religion once they are controlled by generation effects. For the most part, I assume the presence of cohort effects in tune with the secularization theory. My generational hypothesis is that the younger the age-cohort, the less importance it will attribute to religion. Following Inglehart's main thesis, younger generations are socialized on a more secure environment where religion becomes less necessary as a mechanism of anxiety reduction. Additionally, each new generation comes to age in a gradually less religious context. Therefore it receives less influence from religious authorities and institutions.

My hypothesis regarding the effect of aging is that the older the person becomes, the more likely is s/he to give importance to religion. On the one hand, as people grow older, they enter different stages of life with new roles and social networks which could induce them to underline the relevance of religious values. On the other hand, thoughts about suffering from an eventual illness and reflections on the finitude of life are more likely to become prominent as people age. As a consequence, existential anxiety could rise and boost people's religious values. In my analysis, I include age as a categorical variable representing generational groups, and as continuous one in linear, quadratic and cubic forms to try to capture life course or aging effects. Apart from age itself, I also add a more direct measure of life course changes linked to family formation processes: marital status, which I will comment further on.

Many studies consider gender a predictor of religiosity levels, under the assumption that women are more religious than men. Evidence from the US indicates that women participate more frequently in religious organizations, are less likely to become irreligious, and hold more orthodox religious beliefs than men (De Vaus and McAllister 1987, Miller and Hoffman 1995, Sherkat 1998, Sherkat and Ellison 1999). As De Vaus and McAllister (1987) mention, young women may be socialized into religious beliefs and commitments more strongly and successfully, and their structural location in the home may help solidify and perpetuate these commitment. Theorists have also

speculated that higher risk aversion among women may lead them to be more religious (Miller and Hoffman 1995).

Halman and Draulans (2004) talk about two sets of explanations for gender differences in religiosity. From the work force approach (De Vaus and McAllister 1987), it is not gender *per se* but participation in the labor force the crucial factor to explain religious involvement. Employed people are supposed to have less available time to dedicate to religious issues, and are exposed to alternative sources of meaning and stimuli where religion is less relevant. As, traditionally, more men than women were employed; it is less likely for men to be religious. From this point of view, the gender gap in religiosity would tend to fade away the more women enter the labor market. Another set of explanations is linked to the family context. Women are supposed to hold more intense family-oriented attitudes which in turn increase religiosity feelings (Halman and Draulans 2004 commenting on Dobbelaere and Voyé 1992, 2000). There is a discussion whether these gender differences are a product of differential socialization (Miller and Stark 2002). In my models I want to test whether gender continues to be a predictor of religious values once controlling for the rest of explanatory factors. Gender is included as a dichotomous variable with the value 1 for male and 0 for female.

Marital status is another individual-level factor often used to explain religiosity. Getting married is a life course change related to family formation, together with childbearing (Tilley 2003). A debate coming from the United States revolves around the effect of family formation processes in the increase of church attendance (Hout and Greeley 1990, Firebaugh and Harley 1991). In this country, a group of scholars have concentrated on family formation to explain age differences. Tilley (2003) tested the family formation model in Great Britain. He used panel data from the BES and the BHPS. The causal link between getting married and being more religious can be questioned due to a problem of endogeneity: people who attend church more often are more likely to get married than those who do not, given that both phenomena are related to conventionality. When using panel data all individual net change over the lifetime becomes a combination of period and aging effects. Once period effects are controlled for, any other change in religious commitment should come from life course events such as the transition from the unmarried to the married state, other things held constant. In his investigation, Tilley found that people who entered marriage over the

period of observations were more likely to attend church than people who remained single; however the effects were small and could not account for all age differences. Actually, generation and period effects were stronger and both pointed in the direction of secularization.

My hypothesis, in tune with Tilley's results (2003), is that family formation will increase religiosity levels. However, it will not be responsible for the large age differences in the data, which are mainly attributable to generation effects in tune with the secularization process and other possibly unaccounted aging effects. In my models, marital status is entered as a dichotomous variable. The value 1 is for married people, and 0 for the rest of possible situations.

The empirical evidence points to a negative association between education and religiosity. Education reduces religiosity through the increase of cognitive skills, critical thinking, and an emphasis on personal autonomy and individual judgment (Halman and Draulans 2004). Higher levels of education are linked to a rational worldview, which promotes skepticism about the existence of God and the purpose of religion. It can also be argued that people is either scientific or religious, following Weber's idea of the incompatibility of religious ideas and scientific thinking (Johnson 1997). I have operationalized education using a dichotomous variable, which confronts those holding at least a college degree against the rest. My hypothesis is that people with higher education will be less religious, other things held constant.

Postmaterialist values at the individual level are also considered in this analysis. Following Inglehart's interpretation (1990), people holding postmaterialist orientations will not need to rely that much on religion for seeking assurances and certainties in life. As they have been raised in a secure environment, security will be taken for granted. My hypothesis here is that, *ceteris paribus*, people holding postmaterialist values will be less religious. The indicator of postmaterialism I use is the four-item battery in its ordinal format.

Having a particular church affiliation has an effect on religiosity levels. In the US, Hout and Greeley (1987) indicate than Catholics have been more affected than Protestants by secularization and disaffection from the church hierarchy. More recently, Schwadel

(2010a) shows how people with Catholic and Protestant denominations secularize at different speeds. My main hypothesis at the individual level is that those affiliated to the Catholic Church will still be more religious than those in the Protestant Church. In the models, I use two dichotomous variables: one for individuals affiliated to the Catholic Church, and another one for those in the Protestant Church. The reference category groups people without religious denomination or those with a religious denomination different from the Protestant or Catholic ones.

Another factor related to religious patterns is cosmopolitanism. According to Roof (1978) traditional church religion is less able to provide a unified system of meaning the more "modern" the social context is. In small and rural communities, the religious world view has less competition with alternative systems of thought and therefore is still able to exert its traditional authority. However, in the culturally diverse context of larger cities, people are exposed to a more varied set of influences. This diversity of options can threat the faith in any particular system of supernatural beliefs. Individuals who live in culturally isolated communities, also called "locals", may continue to show higher levels of traditional orthodoxy, whereas those living in modern cities would be cosmopolitan and less committed to customary religion. Roof predicted church membership to be higher in smaller cities than in larger ones.

Instead of cosmopolitanism, Halman and Draulans (2004) very similarly talk about the effects of globalization on religion. As the modern world is increasingly a global village where knowledge and information become readily available to all, people is no longer limited to their direct social context. Individuals experience a wide variety of influences from other parts of the world, and become exposed to alternative worldviews and value systems (Draulans and Halman 2003). According to these authors, the more globalized the social context is, the less prevalent traditional religion will be, given that people living in a globalized society are confronted with a great variety of cultural habits, values, and norms. Larger cities tend to be more globalized than smaller communities.

The religious market theory proposes a conflicting interpretation to that of cosmopolitanism or globalization. Finke and Stark (1988) consider that competition among religious denominations in more culturally diverse environments may increase church membership. Large cities can support a greater range of churches serving a

larger variety of personal spiritual needs and social segments of the population. The authors presented aggregate-level evidence for the US case in support of their position.

I tend to subscribe Roof's approach, and my hypothesis is that the larger the city size in which the person lives, the less religious s/he will be. Roof (1978) focused mainly on ecological variables and used geographic mobility and city size as measures of his concept. I use the city size as a proxy of cosmopolitanism. It is an ordinal indicator with five categories: 1 'less than 2,000 people', 2 '2,000-4,999', 3 '5,000-9,999', '10,000-49,999', and '50,000 or more'.

Time-Invariant Country-level Covariates

What type of country-level characteristics is able to explain differences in religiosity across nations? A number of explanations have been mentioned in the literature. Some are linked to the secularization theory in its different versions (Dobbelaere 1993, Wilson 1982, and Norris and Inglehart 2004), which all in all emphasize country's degree of societal modernization; some others underline the cultural idiosyncrasies of each nation, and its historical and religious background (Martin 1978a); and others refer to the vitality of competition among cults, following the religious market hypothesis (see Finke and Stark 2000 among others). I want to test the capacity of this group of theories to explain the overall differences in the levels of religiosity between nations. As the countries in my sample are observed at different points in time, I first use static or time-invariant measures of the country-level characteristics, this is, measures averaged over time within each country to account for differences between countries that persist over time, distinguishing them from the changes overtime.

Inglehart argues that religious decline is a result not only of individualization, increasing rationality, functional differentiation, and specialization but also and most importantly, of increasing levels of security, produced by the establishment of the modern welfare state and material wealth. In economically less advanced countries, religion is expected to remain an important determining factor providing people with certainties and the assurance of salvation (Inglehart 1997). Whereas, in economically more developed areas, existential security is guaranteed and the need for reassurance

provided by religion would have diminished. Therefore, in economically less advanced countries religion would provide assurance for salvation, while in economically more developed there would be no need for that.

Among the group of indicators of existential security that can be related to the secularization process I use the GDP per capita. It is also one of the measures employed by Norris and Inglehart (2004) to capture socioeconomic development and human security. Draulans and Halman (2003 following Van Snippenburg 1986) acknowledged GDP per capita's capacity to capture the welfare of a country. However they used it to indirectly measure the effects of rationalization, another explanation of secularization, under the assumption that the wealthier the country, the more rationalized it will be. In Norris and Inglehart's theory, increasing levels of prosperity and economic welfare are supposed to provide higher levels of existential security, which are associated to religious decline.

Additionally, I use the UNDP Human Development Index as an indicator of existential security. The HDI is a standardized measure (100 point scale) that combines life expectancy, literacy, education and level of income of countries worldwide. Norris and Inglehart (2004) argue that this measure provides a broader indicator of human security and the distribution of basic public goods than economic growth alone. In my analysis, I also introduce the GINI coefficient, used by Norris and Inglehart as a human security measure. This index summarizes the level of income inequality in a given society. It is of special interest in my research, since I am comparing already rich societies in relative terms. With such a sample, it is the within-country's distribution of income what can more easily explain individual's perception of existential security, and therefore the corresponding religiosity levels. Income equality could also be understood as an outcome of welfare state policies. From the point of view of individual rationality, Gill and Lundgaarde (2004) argue that the extension of the welfare state explains religious decline. The development of welfare state substitutes the role of religious institutions, which historically provided social welfare, and therefore religion loses its rationale.

The historic and religious background of a society is thought to affect its current religious situation in a sort of path dependent way. Differences in the religious creeds, *ceteris paribus*, are thought to have an independent effect on secularization patterns.

This type of explanation is usually presented in the literature to account for differences in the speed of secularization between countries (Martin 1978a, Davie 2002, Draulans and Halman 2003, Norris and Inglehart 2004). Secularization seems to have affected Protestant Churches more than the Catholic Church. From the cultural point of view, the explanation lays in theological differences. Protestants are personally responsible before God, and the church has a lesser role as mediator between the believer and God. On the contrary, the Catholic Church imposes a more collective identity upon its faithful (Jagodzinski and Dobbelaere 1995). Orthodox theology brings the idea of 'sobernost' (unity-in-freedom), halfway the individual freedom of Protestantism and the centralized community of Catholicism. It means that the absolute bearer of truth in the Church is not the religious hierarchy but the Church as a whole (Halman and Draulans 2004 from a revision of Demey 2003). Latent to these arguments is the idea that particular religious creeds are more able than others to promote individualism and rational thinking in the long run, which would eventually end up in reducing the importance of religion in the contemporary world. Catholic societies will be more religious than Orthodox societies, and both will be more religious than Protestant countries (Halman and Draulans 2004).

There is a number of available religious classifications for countries (see Martin 1978a, or Barrett et al. 2001 for a more up-to-date version), but I use Norris and Inglehart's (2004) for the sake of simplicity and the purpose of replicating their analysis. This classification locates the 28 countries I am studying into four groups according to the predominant religious denomination: Protestant (Australia, Britain, Denmark, Finland, Germany, The Netherlands, New Zealand, Norway, Sweden, Switzerland, and United States), Catholic (Austria, Belgium, Canada, France, Ireland, Italy, Spain, Czech Republic, Hungary, Mexico, Poland, Portugal, Slovakia), Muslim (Turkey), and Eastern (Japan and South Korea). No Orthodox country is included in the analysis because those likely to enter do not have proper time-series data to be analyzed. Finally, predominantly Protestant countries are entered holding the rest as reference categories. Therefore, I am going to test whether coming from a Protestant tradition has any explanatory capacity when controlling for other relevant country-level characteristics.

Another contending explanation for the varying levels of religiosity across countries is the religious market theory. The major proponents of this theory are authors such as Bainbridge, Finke and Stark, or Iannaccone, among others. Religious market theory

expects the levels of religiosity to be influenced by the supply of religion. In a mimic of economic theories, religious competition is supposed to produce higher levels of institutional religiosity and church affiliation. As Stark and Finke (2000) put it, the more competition there is, the more likely churches and denominations are to adapt their supply to the religious demands and consequently religious participation will remain high or will increase. In mono-religious cultures, there is no competition. In religiously pluralistic cultures, the members of the various religious groups are likely to emphasize their distinctiveness, in order to compete effectively with the other religious groups. Therefore, in more religiously pluralistic societies, people will be more active and more religious than in less pluralistic societies. Norris and Inglehart (2004) demonstrate that pluralism has no positive relationship with participation, either within postindustrial societies or in a worldwide perspective. They conclude that the degree of pluralism in a society is far less important than people's experience with whether survival is seen as secure or insecure.

For measuring the degree of religious pluralism of a country, I use the Herfindahl Concentration Index applied to the study of religious markets (see Norris and Inglehart 2004, Halman and Draulans 2004, Draulans and Halman 2003 among others). It is based on a combination of the number of religious denominations in a country, and the adherence to these denominations. The exact formula of the HCI is:

$$H = \sum_{i=1}^{N} s_i^2$$

where s_i is the market share of religious denomination i in the market, and N is the number of religious denominations in a given country. The maximum value of the index is 1.0. The information on the number of members of every religious denomination in each country is obtained from the WVS survey data. The larger the amount of denominations in a country and the more even the distribution of members among them, the lower the Herfindahl index will be, and the more pluralistic or less concentrated the religious market.

As an additional explanatory factor, I include the country-level of postmaterialism. I hypothesize that the overall level of postmaterialism of a nation can provide a particular context which could affect religious values. My hypothesis about the contextual effects of postmaterialism goes in the same direction as the effect of postmaterialist values at the individual-level: the more postmaterialist, the less religious a country would be. For the operationalization of postmaterialism, I use the Percentage Difference Index per country.

Time-Varying Country-level Covariates

I want to test not only the capacity of country-level covariates to explain the overall differences in the levels of religiosity between countries, but also how the change in these covariates overtime affects the evolution of the importance of religion. This second type of analysis is achieved by means of group centering the second level time-varying covariates. If I should enter the country-level variables averaged over time per country together with the time-varying covariates, I would have a problem of collinearity. To avoid this problem, I center the time-varying covariates into their country means, averaged overtime. Whenever these time-varying covariates should show a positive sign, they would be reflecting a period of increase with respect to the country mean, and vice versa. If a particular time-varying covariate should have negative values at the beginning of the period of observations, and positive ones at the end, it would imply that it had an increasing trend: a typical linear modernization process. By having these two types of covariates: time averaged, and time-varying; I am able to capture both constant differences between countries and the dynamic effects.

This aspect of the analysis is crucial for a test of my hypothesis of real-time change in values. If changes in the time-varying covariates are able to produce real-time effects in my dependent variable, I will gather support for my thesis that values and symbolic attitudes shift in real-time in response to contextual changes and not just by cohort replacement. Once potential generation and age effects are controlled, I should be able to spot period effects. A more meaningful way of measuring period effects across countries than just by using the linear passage of time is to observe the change in exogenous covariates linked to modernization. The dynamic measures of modernization

at the country level that I use are the increase in the GDP per capita, the increase in the Human Development Index, and the evolution of income inequality levels. Those are some of the most important indicators of human security mentioned by Norris and Inglehart (2004). The countries in which the GDP had increase the most, irrespective of their actual levels, would experience higher reductions in religiosity. I also introduce the increase in HDI, perhaps a more complete measure of modernization than GDP alone, as it takes into account more dimensions of human security. Those countries with higher overtime increases in HDI would also experience a parallel reduction in the importance of religion, *ceteris paribus*. Conversely, growing inequality, as measured by the evolution of the Gini coefficient, will tend to boost support for religion. Apart from change in human security levels, I also introduce a measure of the growth in religious pluralism: the evolution of the religious Herfindahl Concentration Index. An increase in pluralism would raise religiosity levels, following the religious market hypothesis.

One of the novelties of my analysis, in comparison to the rest of the literature, is that it provides both a dynamic and a multilevel explanation of secularization. Most of the research performed so far (to my knowledge) does not use this research strategy, and go either for country comparisons, for individual level analysis, or for dynamic analysis alone.

Across-Country over Time Data Analysis

There are considerable differences among countries with respect to the importance religion has in people's life, taking each nation's last wave as reference for comparison[35] (table 4.11). The least religious countries, where less than 35% of the population considers religion to be very or rather important, are Japan (19.5), the Czech Republic (19.7), Denmark (27.0), and Sweden (29.4), followed by the Netherlands (31.5), Norway (32.8), and Germany (33.9). On the other side, the countries with higher levels of religiosity among the most developed are the USA (71.6), Ireland (72.0), Portugal (75.5) and Italy (76.2). However, the most religious of all are as well the least developed of the group: Mexico (85.1), Poland (86.8) and Turkey (91.3). Their higher

[35] The last wave is different depending on the country. For Ireland, Hungary, the Czech Republic, Austria, Denmark, Iceland, Belgium, the Slovak Republic, and Portugal, the last wave is the fourth (1999-04), not the fifth (2005-07).

levels of religiosity are probably a consequence of their comparatively lower levels of human development.

Which are the reasons beneath the variation in the importance of religion across countries? A first bivariate analysis to account for these differences is presented in table 4.12. It contains the correlations of importance of religion with country-level characteristics usually considered as explanations in the literature. First, I include indicators of human security, following Inglehart's approach to secularization. I incorporate the Human Development Index (UNPD data), the Gross Domestic Product per head (OECD statistics), and Gini coefficient as measures of existential security. From Inglehart's point of view, higher levels of existential security are the main source of decrease in importance of religion and in overall religiosity levels.

Table 4.11 Percentage of Respondents for Whom Religion is Very or Rather Important in Their Lives in 28 OECD countries, 1989-2007.

	1989-93	1994-99	1999-04	2005-07	Diff.	Slope	Intercept
Spain	53.0	58.0	45.8	39.1	-13.9*	-5.4	62.5
Netherlands	43.8	-	37.4	31.5	-12.4*	-6.2	49.9
Ireland	83.6	-	72.0	-	-11.6*	-11.6	95.2
Australia	-	48.2	-	39.2	-9.0*	-9.0	57.2
Switzerland	54.5	41.7	-	45.5	-8.9*	-4.5	56.2
USA	79.7	82.3	82.6	71.6	-8.1*	-2.4	85.1
Hungary	49.9	42.2	42.2	-	-7.7*	-3.9	52.5
Norway	40.3	38.2	-	32.8	-7.5*	-3.8	44.6
South Korea	53.7	51.2	52.2	46.9	-6.7*	-1.9	55.9
Czech Rep.	25.2	23.7	19.7	-	-5.6*	-2.8	28.4
New Zealand	-	40.3	-	35.7	-4.6*	-4.6	44.9
Austria	58.0	-	53.8	-	-4.3*	-4.2	62.2
Denmark	31.3	-	27.0	-	-4.2*	-4.3	35.6
Great Britain	44.7	-	37.3	40.7	-4.0	-2.0	44.9
Canada	61.4	-	60.6	59.1	-2.4	-1.2	62.7
France	42.7	-	36.9	40.9	-1.8	-0.9	42.0
Poland	88.6	83.6	83.9	86.8	-1.8	-0.5	87.0
Germany	35.6	33.8	35.0	33.9	-1.7	-0.4	35.6
Iceland	56.2	-	55.3	-	-0.9	-0.9	57.1
Japan	20.3	22.0	22.3	19.5	-0.7	-0.2	21.6
Belgium	45.3	-	45.5	-	0.1	0.2	45.1
Sweden	27.2	29.5	35.1	29.4	2.2	1.2	27.3
Italy	70.0	-	72.1	76.2	6.2*	1.2	27.3
Finland	38.2	45.1	45.1	45.1	6.9*	2.1	38.2
Turkey	84.2	93.5	93.5	91.3	7.1*	2.1	85.3
Slovakia	50.1	55.5	57.4	-	7.3*	3.7	47.0
Mexico	71.6	79.5	87.9	85.1	13.5*	4.9	68.8
Portugal	56.3	-	75.5	-	19.2*	19.2	37.1
Average	52.5	51.1	53.2	50.0	-2.0	-0.5	53.1
SD	18.6	21.7	21.3	21.7	7.8		
Correlations							
Slope - Intercept		-0.28					

Significance: * $p<0.05$; Z-test for the comparison of proportions.

Source: World Values Surveys, pooled 1981-2007.

The majority of countries I compare are already highly developed, but they differ in their internal levels of income inequality. Therefore I introduce a measure of country's income inequality: the Gini coefficient (OECD statistics). High levels of income inequality imply an uneven distribution of the benefits of wealth and development in a

society. Inequality can foster existential insecurity within a nominally rich nation. I also include a measure of the country's religious pluralism as an indicator of the set of explanations linked to the supply-side of religion, or the religious market hypothesis, although many empirical investigations demonstrate it is unsatisfactory to explain cases different from the US (see Norris and Inglehart 2011, Draulans and Halman 2004 among others). I construct the Herfindahl index from the WVS data to summarize the degree of religious pluralism of each country. Finally, I rely on Norris and Inglehart's classification of country's religious denomination (2004), as well as the general level of postmaterialism measured with the aggregate Percentage Difference Index (PDI).

The human security indicator which has a higher relation to the national levels of importance of religion in people's life is the country's income inequality. A positive correlation of .753 shows that the steeper the income inequality in a country, the higher the importance of religion. This association can also be observed in the scatter plot of figure 4.7. The correlation with the HDI is high as well (-.613), meaning that the lower the level of human development, the higher the importance of religion and vice versa. The measure of the GDP per head, which is partly included in the HDI trough income per capita[36], presents a somewhat lower correlation (-.435). The combination of indicators used to build the HDI (life expectancy, literacy, education and income per capita) seems to correlate better than GDP per head alone. In Catholic countries the levels of importance of religion are higher (.372), whereas in Protestant nations the reverse takes place (-.403). Religious pluralism does not have a statistically significant effect (.317) on the country differences in importance of religion, but the positive sign of the coefficient is in tune with the theoretical expectations: the higher the pluralism, the higher is the importance of religion. The level of postmaterialism shows an even lower correlation (-.169), but also in the expected direction. Later on, I will explore whether these associations hold when the appropriate multivariate controls are applied using multilevel analysis.

[36] The per capita income is calculated by taking a measure of all sources of income in the aggregate (such as the GDP or the GDI) and dividing it by the total population. It does not attempt to reflect the distribution of income or wealth.

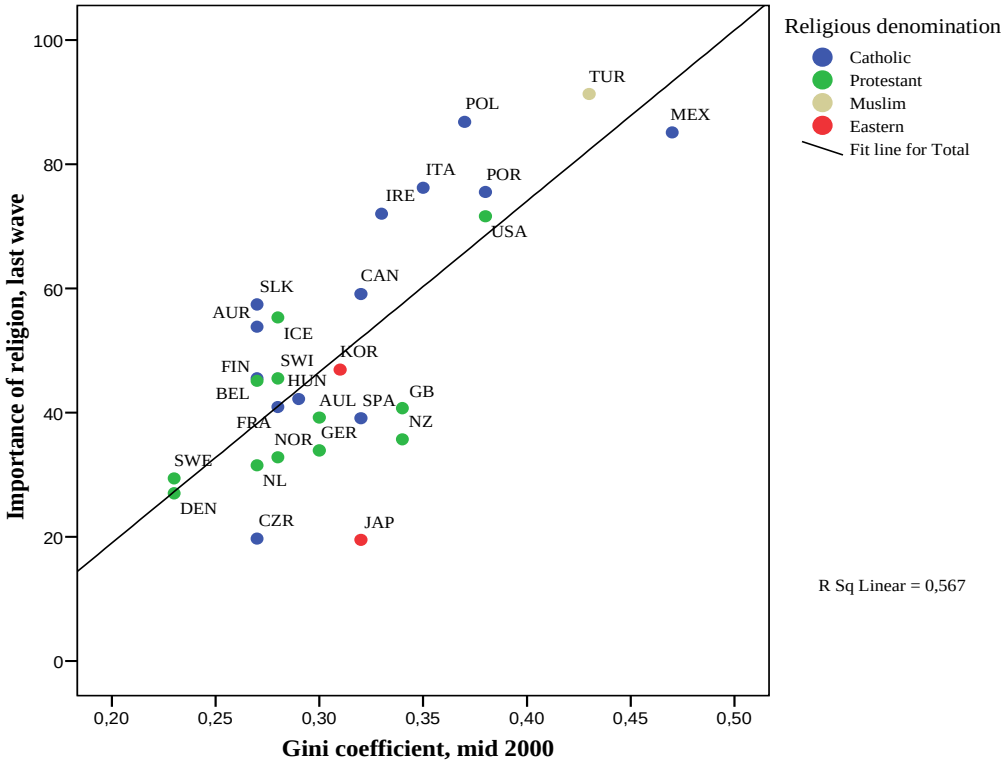
Table 4.12 Bivariate Pearson Correlations between Importance of Religion in the Last Wave and Country-level Predictors.

	Importance of religion	
HUMAN SECURITY		
Gini coefficient, mid 2000	0.753	***
HDI, mid 2000	-0.613	***
GDP per head, 2008	-0.435	**
RELIGIOUS DENOMINATION		
Catholic	0.372	*
Protestant	-0.403	**
RELIGIOUS PLURALISM		
Herfindahl index	0.317	
LEVEL OF POSTMATERIALISM		
PDI, last wave	-0.169	
Importance of God	0.958	***

Significance: ***p<0.01; **p<0.05; *p<0.10.

The main concern of my analysis is with the dynamics of values. What has been the average evolution of importance of religion across countries? The mean difference between the starting and the end moments of the series across nations is -2 points; which means a slight overall reduction (table 4.11). The average slope coefficient of the trend across groups is -.5. Nevertheless, these averages do actually hide a considerable degree of cross-country variation. In 20 out of 28 countries (71%) there has been a reduction in levels. This reduction has been statistically significant in 13 cases (46%). Conversely, in 8 out of 28 countries (29%) there has been an increase in importance of religion, being statistically significant in 6 cases (21%). It is also possible to observe a slight relationship between the evolution over time and the starting level of religiosity. There is a correlation of -.28 among intercept and slope coefficients of the time trends, suggesting a possible floor effect: the lower the country starts the less religiosity it can lose over time. Among the countries with steeper decreases in importance of religion are Spain (-13.9 points), Ireland (-11.6) or South Korea (-6.7) which have also experienced a high degree of economic growth over this same period of time.

Figure 4.7 Importance of Religion and Gini Coefficient in 28 OECD Countries, Last Wave.



Which exogenous covariates are involved in the dynamics of importance of religion in life? Table 4.13 presents the bivariate correlations between the change in this value over time, and that of the national level predictors. There is a clear association between the increase in the GPD per head and the reduction of importance of religion (-.566). Countries that have sought their per capita GDP grow higher are also those in which religion has come to be less relevant to their citizenry. This piece of evidence favors Inglehart and Norris' view of secularization as a consequence of the increasing levels of existential security. Also in tune with their interpretation is the correlation with the evolution of income inequality (.327). The more unequal societies turn, the more important religion becomes, and vice versa. The correlation with the increase in HDI is not significant, tough unexpectedly positive. Not statistically significant is also the association with the evolution of postmaterialist values (PDI scores), however in this case the negative sign confirms the expectations.

Table 4.13 Bivariate Pearson Correlations Between the Evolution of Importance of Religion and the Evolution of National Context Variables.

	Evolution of the importance of religion
Diff. GDP per head	-0.566 ***
(1980-2008)	
Diff. HDI	0.127
(1980-2005)	
Diff. Gini coefficient	0.327 *
(mid 1980 - mid 2000)	
Diff. PDI	-0.083
(WVS 1st-5th wave)	

Significance: ***p<0.01; **p<0.05; *p<0.10.

Between and Within Cohort Changes

I want to separate intra from inter-generational changes overtime, to be able to compare them. Figures 4.8 and 4.9 portray the dynamics of each generation in every country over the available waves. In almost every nation, there are differences between cohorts such that the older the generation, the more importance it gives to religion. With respect to each cohort's evolution over time, the outline seems less uniform, and it is difficult to extract clear-cut patterns from the large amount of information. Table 4.14 reflects on this issue and summarizes the different types of variation in the data. I distinguish between raw and adjusted changes. The former directly show the results of a subtraction, whereas the latter are weighted by the dissimilar time frame of period and cohort spans. For each country, raw intergenerational change is calculated by subtracting the average value of the youngest generation to that of the oldest (*Between*), or the second oldest one (*Bet_pre*). Intracohort changes (*Within*) are computed by subtracting the mean value of each generation at the end of the period of observations by that at the beginning, and averaging them out across cohorts. In addition, the absolute value of intracohort differences is calculated (|*Within*|).

It can be argued that directly comparing intercohort with intracohort changes in such a way would not be fair, as the time span between the oldest and the youngest generation expands over eighty years, whereas the interval between observations only reaches 26

years to the most. To take this uneven frame of comparison into consideration, the adjusted changes are computed by dividing the actual estimates by their respective time range: 89 to 49 for the intercohort component, and 26 to 8 for the intracohort one.

By looking at the raw intergenerational differences averaged across countries (-.68) and comparing them to intracohort differences (.09), we see that the former are larger and negative, whereas the latter are minor and positive. The adjusted differences portray a more balanced picture about these two components. Mean intergenerational differences reach -.76, a similar value to that of mean intragenerational ones: .50. In fact, these two forces could be counteracting each other to moderate the aggregate change in some cases. Intergenerational change is constant and monotonic across countries. The younger the generation, the less importance it gives to religion in every nation (see also table A1 in the appendix). The positive within-cohort changes can be interpreted either as period or age effects, or a combination of both.

Table 4.14 Between & Within Cohort Changes in Importance of Religion across Countries.

	Raw changes				**Adjusted changes**			
	Between	**Bet_pre**	**Within**	**|Within|**	**Between**	**Bet_pre**	**Within**	**|Within|**
Average	-0.68	-0.58	0.09	0.20	-0.76	-1.18	0.50	0.93
SD	0.20	0.18	0.21	0.14	0.22	0.36	1.22	0.92
Cluster A	-0.72	-0.58	-0.04	0.16	-0.81	-1.19	-0.28	0.65
Cluster B	-0.60	-0.50	0.38	0.40	-0.68	-1.03	2.21	2.21

Note: Cluster A contains the 13 OECD countries with significant decreasing trends at the overall level. Cluster B groups those 6 nations with increasing aggregate levels of importance of religion in life.

Table A1 in the appendix also provides information on the correlations among the two components of cohort change and between them and the exogenous covariates. It shows that there is a slight positive relationship (.31) between inter-cohort and intra-cohort differences, so that countries experiencing sharpest intergenerational declines coincide with those suffering intragenerational reductions in importance of religion, or at least lower increases. The correlation matrix also indicates that overall change at the country level is much more related to intra-cohort (.79 in raw or .81 in adjusted) than to inter-cohort change (.31). The correlations with the exogenous covariates are minor, but anyway similar among inter and intra-cohort components, possibly meaning that both remain influenced by these external forces in a similar way.

Figure 4.8 Importance of Religion across Cohorts by Wave and Country, in Average Scores.

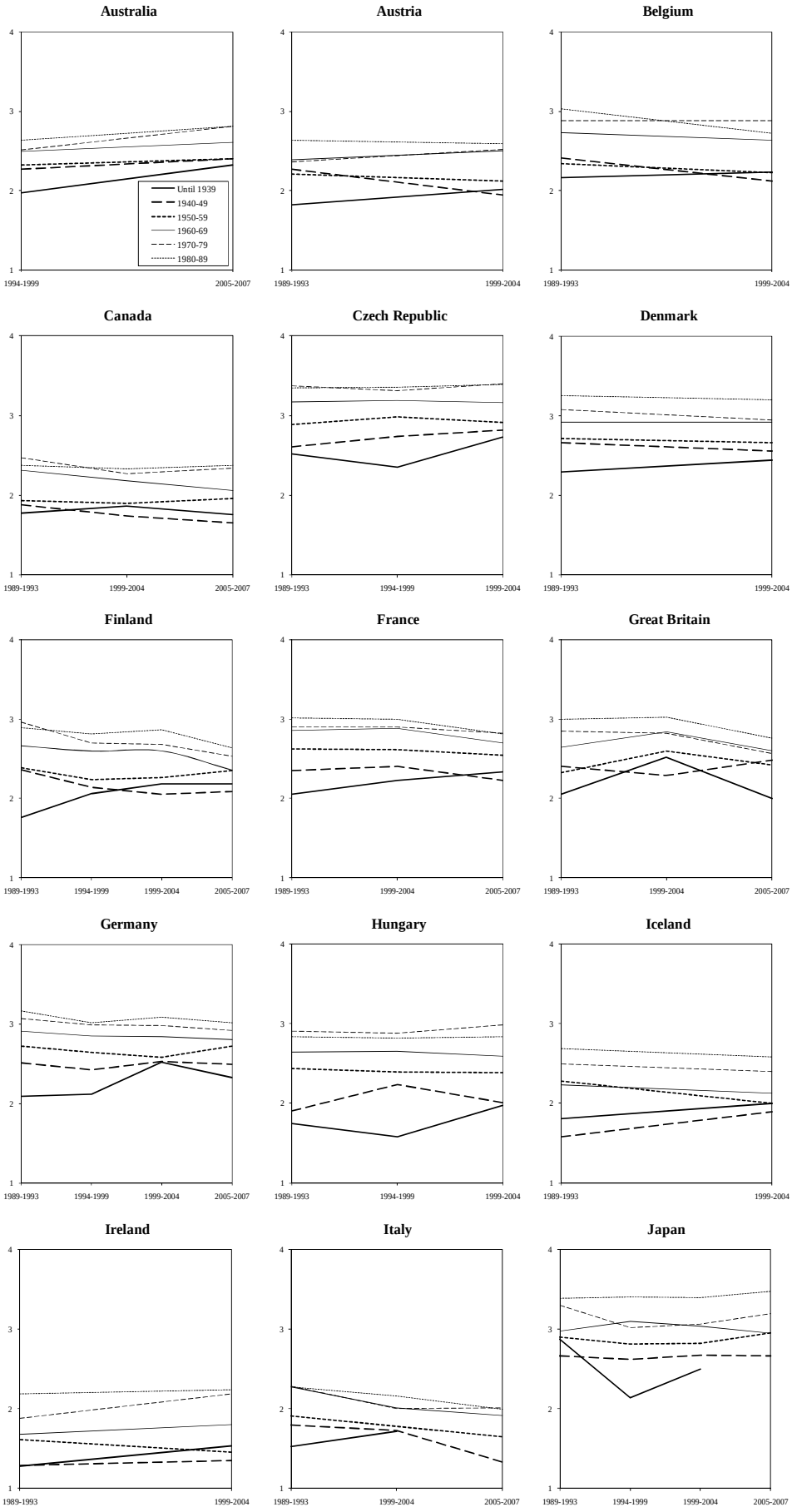
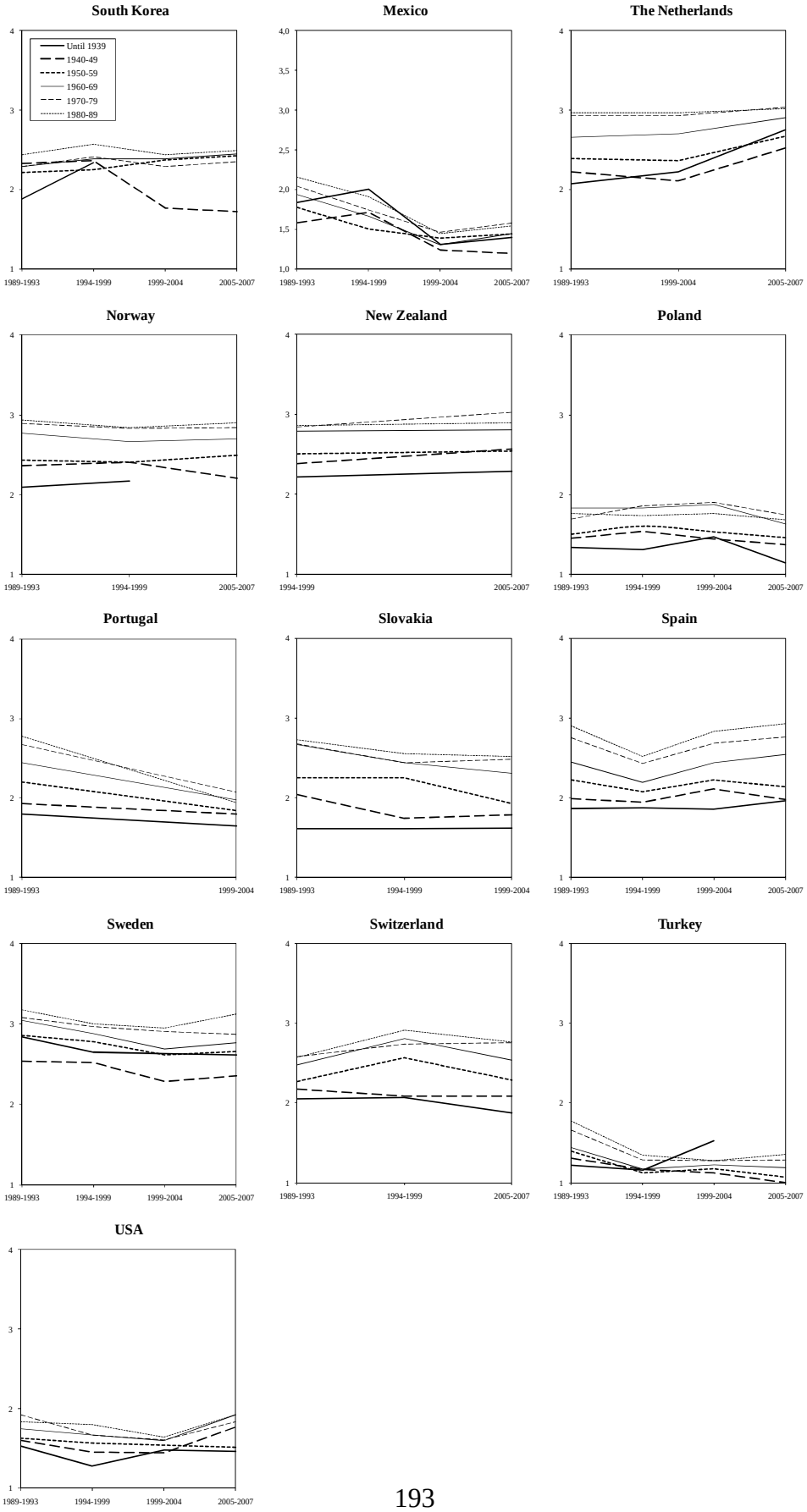


Figure 4.9 Importance of Religion across Cohorts by Wave and Country, in Average Scores.



It could make more sense not to analyze all nations together, as we know they have followed different aggregate evolutions over time. Therefore, in the second part of table 4.14, I group countries into two clusters. Cluster A contains the 13 nations in which there is a statistically significant downward trend in importance of religion at the overall level, and cluster B gathers the six countries with significant upward trends. In doing so, my purpose is to explore possible differences in the inter and intra-generational dynamics, as well as to find out the way in which both contribute to the overall change in values.

By looking at the raw changes, clusters A and B present similar levels of intergenerational differences (-.72 and -.60 respectively). In both clusters, those differences point to a constant and monotonic decrease in importance of religion. Irrespective of the cluster, the younger generation is always less religious than the older one and it happens in a gradual manner across cohorts (see Figures 4.8 and 4.9). In cluster B intergenerational differences are slightly less pronounced. However, what makes both groups different is the within changes. While, in average, cluster A seems not to have experienced any intracohort change (-.04), cluster B portrays an increase of .38. Therefore, the source of the increase in levels for cluster B seems to come from intracohort learning, may it be due to period or age effects, or to a combination of both. Apparently no relevant intracohort changes have taken place in cluster A. This fact is confirmed by observing the adjusted changes. After the weighting, intergenerational differences remain quite unaltered in both clusters; yet positive intracohort changes emerge very prominently in cluster B. In this group of countries, the intragenerational increase in importance of religion (2.21) is more intense than its opposing force: intergenerational change (-.68). The net balance then is an overall increase in importance of religion. To sum up, intergenerational changes are playing a similar role in both clusters, always driving the overall levels downwards. Therefore, the source of increase in the aggregate levels seems to come from intragenerational changes. Let alone from age or period effects, in the long run generational replacement would lower the levels of importance of religion across all countries. However, these counterbalancing forces could be refraining or lagging the loss of relevance of religion.

Country-by-Country Regressions

A first multivariate approach to control for APC components is presented in tables 4.15 and 4.16. They contain the regression results for each separate country when just generation and period effects are considered in the equation, and therefore potential age effects are artificially excluded. The tables contain a set of 28 ordinal logistic regressions, one for each country. What can be readily spotted is the consistency of generation effects across countries. These effects have the same pattern across all countries: religion becomes less important the younger the generation. Irrespective of the country, the structure is almost identical. The picture is much more heterogeneous in the case of period effects. There are countries in which these effects are negative and significant in all cases (12 countries), others in which they are positive and also significant (6), some which combine positive and negative significant effects (2), and countries in which there are no significant period effects at all (8). It has to be taken into consideration that few countries are exhaustively surveyed along the four waves of the WVS –the four that actually include my dependent variable. The models have a reasonable explanatory power considering the few variables taken into consideration. This is mainly attributable to generation effects, which are stronger than period ones as shown in table 4.7. With the only exceptions of Mexico and Turkey, the improvement in the model when period effects are included is smaller, ranging from 0% to 38% of the total explanatory power of the models. Therefore, all things considered, evidence of generation effects is clear, strong and monotonic; though period effects are weaker and non monotonic across countries.

Table 4.15 Ordinal Logistic Regression Predicting Importance of Religion in Life by Country.

		AUL	AUR	BEL	CAN	CZR	DEN	FIN	FRA	GB	GER	HUN	ICE	IRE	ITA
Generation	Until 1939	-1.137*** (0.156)	-1.629*** (0.144)	-1.419*** (0.110)	-1.309*** (0.118)	-1.570*** (0.119)	-1.848*** (0.161)	-1.707*** (0.195)	-1.558*** (0.156)	-1.436*** (0.115)	-1.779*** (0.084)	-1.952*** (0.154)	-1.837*** (0.256)	-2.330*** (0.183)	-1.786*** (0.145)
	1940-49	-0.687*** (0.040)	-1.034*** (0.112)	-1.140*** (0.089)	-1.237*** (0.094)	-1.267*** (0.083)	-1.302*** (0.157)	-1.352*** (0..115)	-1.149*** (0.107)	-0.993*** (0.112)	-1.116*** (0.069)	-1.492*** (0.123)	-1.847*** (0.182)	-2.505*** (0.183)	-1.100*** (0.096)
	1950-59	-0.648*** (0.102)	-0.886*** (0.109)	-1.158*** (0.087)	-0.888*** (0.083)	-0.901*** (0.077)	-1.137*** (0.140)	-1.030*** (0.102)	-0.690*** (0.096)	-0.922*** (0.103)	-0.776*** (0.059)	-0.793*** (0.115)	-1.136*** (0.165)	-1.737*** (0.146)	-0.885*** (0.080)
	1960-69	-0.332*** (0.089)	-0.334*** (0.104)	-0.446*** (0.083)	-0.468*** (0.072)	-0.372*** (0.073)	-0.649*** (0.121)	-0.549*** (0.089)	-0.270*** (0.091)	-0.472*** (0.094)	-0.439*** (0.059)	-0.399*** (0.108)	-1.036*** (0.131)	-1.223*** (0.132)	-0.260*** (0.078)
	1970-79	-0.178*** (0.085)	-0.352*** (0.099)	-0.091 (0.080)	-0.138** (0.064)	0.008 (0.074)	-0.448*** (0.119)	-0.218*** (0.085)	-0.162* (0.087)	-0.322*** (0.093)	-0.164*** (0.055)	0.102 (0.105)	-0.506*** (0.118)	-0.601*** (0.122)	-0.251*** (0.077)
	1980-89	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
Period	Wave 2 (1989-93)	-	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
	Wave 3 (1994-99)	(ref.)	-	-	-	0.119* (0.066)	-	-0.325*** (0.098)	-	-	-0.139*** (0.053)	0.063 (0.093)	-	-	-
	Wave 4 (1999-04)	-	0.006 (0.069)	-0.238*** (0.055)	-0.135** (0.061)	0.077 (0.056)	-0.098 (0.083)	-0.292*** (0.097)	0.049 (0.074)	0.231*** (0.076)	-0.088* (0.053)	0.066 (0.083)	-0.105 (0.093)	0.374*** (0.089)	-0.243*** (0.060)
	Wave 5 (2005-07)	0.378*** (0.063)	-	-	-0.145** (0.060)	-	-	-0.534*** (0.098)	-0.169** (0.083)	-0.185*** (0.077)	-0.076 (0.054)	-	-	-	-0.493*** (0.075)
Thresholds	Cut 1	-1.444*** (0.064)	-1.804*** (0.084)	-2.344*** (0.069)	-1.312*** (0.062)	-2.894*** (0.072)	-3.237*** (0.122)	-2.603*** (0.106)	-2.421*** (0.089)	-2.179*** (0.083)	-2.624*** (0.055)	-1.871*** (0.098)	-2.121*** (0.113)	-1.264*** (0.101)	-1.327*** (0.064)
	Cut 2	-0.352*** (0.059)	-0.228*** (0.076)	-0.803*** (0.060)	-0.034 (0.059)	-1.654*** (0.062)	-1.621*** (0.099)	-1.011*** (0.097)	-0.811*** (0.078)	-0.845*** (0.075)	-1.171*** (0.048)	-0.642*** (0.091)	-0.433*** (0.100)	0.679*** (0.096)	0.373*** (0.061)
	Cut 3	1.090*** (0.062)	1.275*** (0.081)	0.478*** (0.060)	1.412*** (0.064)	-0.152*** (0.057)	0.247*** (0.091)	0.867*** (0.097)	0.540*** (0.077)	0.730*** (0.074)	0.322*** (0.047)	0.755*** (0.091)	1.203*** (0.106)	2.182*** (0.119)	1.812*** (0.071)
	Nagelkerke's R	0.042	0.071	0.085	0.061	0.081	0.095	0.071	0.061	0.073	0.077	0.127	0.109	0.222	0.066
	-2LL	246.60	243.30	310.37	386.82	401.46	210.43	402.61	306.42	382.48	589.82	318.85	192.57	194.10	327.17
	Chi2	137.41***	201.61***	385.32***	337.82***	462.13***	185.24***	264.61***	210.87***	246.67***	695.74***	334.31***	179.25***	449.69***	311.11***
	Observations	N=4,697	N=2,982	N=5,849	N=7,079	N=6,088	N=3,235	N=4,630	N=4,818	N=5,785	N=9,563	N=4,113	N=2,597	N=3,229	N=6,378

Dependent variable: Importance of Religion in Life (range 1 'very important'. 2 'rather important'. 3 'not very important'. and 4 'not at all important').
Significance: ***p<0.01; **p<0.05; *p<0.10.

Table 4.16 Ordinal Logistic Regression Predicting Importance of Religion in Life by Country.

		JAP	KOR	MEX	NL	NOR	NZ	POL	POR	SLK	SPA	SWE	SWI	TUR	USA
Generation	Until 1939	-1.843*** (0.226)	-1.233*** (0.379)	-0.462 (0.289)	-1.383*** (0.153)	-1.687*** (0.159)	-0.961*** (0.237)	-1.314*** (0.155)	-1.998*** (0.178)	-2.089*** (0.175)	-1.975*** (0.082)	-0.862*** (0.168)	-1.345*** (0.123)	-1.085** (0.436)	-1.041*** (0.117)
	1940-49	-1.792*** (0.122)	-0.440** (0.177)	-1.032*** (0.140)	-1.226*** (0.125)	-1.196*** (0.119)	-0.626*** (0.149)	-0.870*** (0.103)	-1.485*** (0.137)	-1.446*** (0.105)	-1.601*** (0.068)	-1.328*** (0.104)	-1.197*** (0.110)	-1.059*** (0.213)	-0.733*** (0.095)
	1950-59	-1.369*** (0.093)	-0.407*** (0.095)	-0.751*** (0.090)	-0.862*** (0.112)	-1.021*** (0.108)	-0.523*** (0.130)	-0.634*** (0.089)	-1.058*** (0.127)	-0.930*** (0.095)	-1.262*** (0.062)	-0.764*** (0.096)	-0.795*** (0.099)	-0.803*** (0.122)	-0.677*** (0.090)
	1960-69	-1.049*** (0.085)	-0.260*** (0.074)	-0.508*** (0.074)	-0.395*** (0.098)	-0.470*** (0.091)	-0.054 (0.114)	0.086 (0.085)	-0.689*** (0.123)	-0.298*** (0.085)	-0.849*** (0.061)	-0.526*** (0.082)	-0.363*** (0.090)	-0.503*** (0.095)	-0.316*** (0.076)
	1970-79	-0.769*** (0.086)	-0.331*** (0.065)	-0.280*** (0.061)	-0.013 (0.094)	-0.196** (0.089)	0.125 (0.110)	0.048 (0.077)	-0.309*** (0.117)	-0.204** (0.080)	-0.363*** (0.057)	-0.283*** (0.085)	-0.215** (0.086)	-0.122* (0.066)	-0.219*** (0.070)
	1980-89	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
Period	Wave 2 (1989-93)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	-	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
	Wave 3 (1994-99)	-0.111 (0.088)	0.148** (0.073)	-0.501*** (0.062)	-	-0.101 (0.077)	(ref.)	0.190** (0.076)	-	-0.286*** (0.072)	-0.372*** (0.060)	-0.296*** (0.083)	0.381*** (0.074)	-1.245*** (0.089)	-0.275*** (0.068)
	Wave 4 (1999-04)	0.009 (0.085)	0.060 (0.074)	-1.411*** (0.073)	0.040 (0.081)	-	-	0.171** (0.077)	-0.928*** (0.083)	-0.402*** (0.069)	0.015 (0.048)	-0.605*** (0.084)	-	-1.146*** (0.076)	-0.399*** (0.075)
	Wave 5 (2005-07)	0.067 (0.090)	0.234*** (0.075)	-1.084*** (0.071)	0.332*** (0.084)	-0.002 (0.081)	0.090 (0.081)	-0.035 (0.081)	-	-	0.170*** (0.061)	-0.342*** (0.085)	0.150** (0.075)	-0.841*** (0.092)	0.060 (0.073)
Thresholds	Cut 1	-3.599*** (0.106)	-1.317*** (0.067)	-0.920*** (0.057)	-1.886*** (0.088)	-2.503*** (0.091)	-1.590*** (0.090)	-0.231*** (0.071)	-2.485*** (0.099)	-1.804*** (0.074)	-2.194*** (0.050)	-3.037*** (0.094)	-1.837*** (0.085)	0.173** (0.072)	-0.331*** (0.066)
	Cut 2	-2.224*** (0.092)	-0.029 (0.064)	0.603*** (0.057)	-0.735*** (0.081)	-1.016*** (0.080)	-0.586*** (0.082)	1.716*** (0.077)	-0.355*** (0.082)	-0.465*** (0.069)	-0.725*** (0.045)	-1.614*** (0.082)	-0.391*** (0.080)	1.387*** (0.076)	0.903*** (0.068)
	Cut 3	-0.325*** (0.085)	1.631*** (0.069)	2.360*** (0.076)	0.581*** (0.081)	0.827*** (0.079)	0.645*** (0.083)	0.108*** (0.108)	1.057*** (0.089)	0.792*** (0.070)	0.691*** (0.061)	0.229*** (0.078)	1.102*** (0.081)	2.473*** (0.090)	2.388*** (0.081)
	Nagelkerke's R	0.103	0.015	0.090	0.081	0.074	0.029	0.052	0.150	0.092	0.138	0.060	0.078	0.045	0.036
	-2LL	406.29	380.01	412.87	375.42	306.06	198.19	380.51	212.57	334.40	511.33	391.07	325.03	305.77	410.83
	Chi2	395.48***	66.42***	578.14***	236.30***	239.99***	56.30***	225.72***	323.08***	355.73***	1.231.8***	227.11***	285.23***	308.42***	190.85***
	Observations	N=5,727	N=5,868	N=8,827	N=4,291	N=4,442	N=2,155	N=5,168	N=2,185	N=4,028	N=11,270	N=5,017	N=3,853	N=8,887	N=8,155

Dependent variable: Importance of Religion in Life (range 1 'very important', 2 'rather important', 3 'not very important', and 4 'not at all important').
Significance: ***p<0.01; **p<0.05; *p<0.10.

Table 4.17 Nagelkerke's Pseudo R-squared Values from Ordinal Logistic Regression Models Predicting Importance of Religion in Life.

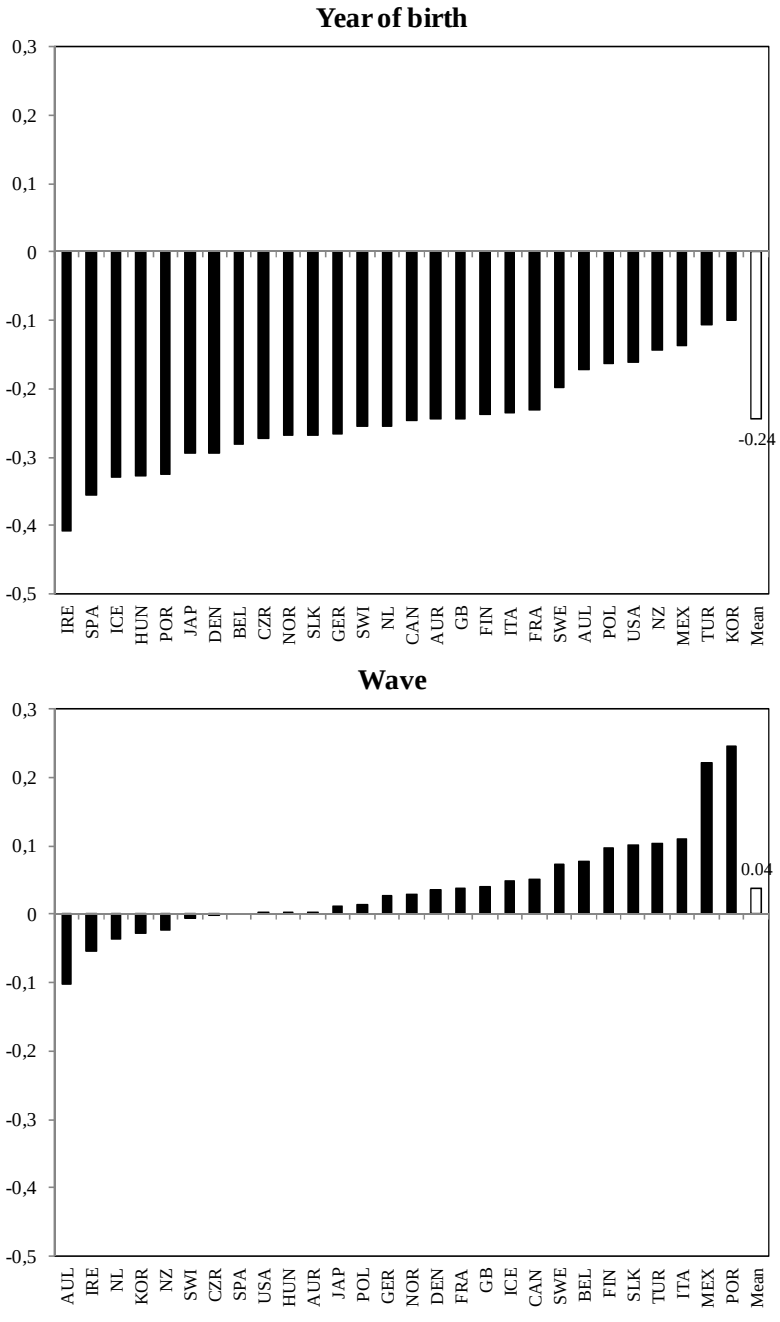
	AUL	AUR	BEL	CAN	CZR	DEN	FIN	FRA	GB	GER	HUN	ICE	IRE	ITA
Generations only	0.031	0.071	0.081	0.059	0.081	0.094	0.068	0.059	0.066	0.076	0.127	0.109	0.214	0.056
Generations and waves	0.042	0.071	0.085	0.061	0.081	0.095	0.071	0.061	0.073	0.077	0.127	0.109	0.222	0.066
Change in R squared	0.011	0.000	0.004	0.002	0.000	0.001	0.003	0.002	0.007	0.001	0.000	0.000	0.008	0.010
Improvement	26.2%	0.0%	4.7%	3.3%	0.0%	1.1%	4.2%	3.3%	9.6%	1.3%	0.0%	0.0%	3.6%	15.2%
Number of waves	2	2	2	3	3	2	4	3	5	4	3	2	2	3

	JAP	KOR	MEX	NL	NOR	NZ	POL	POR	SLK	SPA	SWE	SWI	TUR	USA
Generations only	0.102	0.012	0.017	0.074	0.073	0.028	0.050	0.093	0.083	0.132	0.046	0.071	0.009	0.026
Generations and waves	0.103	0.015	0.090	0.081	0.074	0.029	0.052	0.150	0.092	0.138	0.060	0.078	0.045	0.036
Change in R squared	0.001	0.003	0.073	0.007	0.001	0.001	0.002	0.057	0.009	0.006	0.014	0.000	0.036	0.040
Improvement	1.0%	20.0%	81.1%	8.6%	1.4%	3.4%	3.8%	38.0%	9.8%	4.3%	23.3%	4.7%	80.0%	16.3%
Number of waves	4	4	4	3	3	2	4	2	3	4	4	3	4	4

Dependent variable: Importance of Religion in Life (range 1 'very important', 2 'rather important', 3 'not very important', and 4 'not at all important').
Significance: ***p<0.01; **p<0.05; *p<0.10.

To better compare generation and period effects to one another and across countries, figure 4.10 jointly presents the OLS betas of the same kind of models. However, in this case generation and period effects are introduced in a linear format. Cohort is measured by the year of birth variable, and period by the wave-order number, an ordinal variable. This linear transformation does not distort cohort effects, as they are already linear within countries; and period ones just marginally, since they are non-linear only in 2 out of 28 cases.

Figure 4.10 Effects of Year of Birth and Wave (in OLS Betas) on Importance of Religion by Country.



The average cohort effect is -.24, while its period equivalent is 0.04. Generation effects are homogenously negative and significant across nations. Countries with highest cohort effects (almost -.4) are Ireland, Spain, Iceland, Hungary, or Portugal, some of them experiencing accelerated modernization processes during recent decades. Period effects are weaker and much more heterogeneous in comparison. In 21 countries these effects are lower than ±.1; and the rest never reaching beyond .25. Just in 7 countries the coefficients are negative, meaning a reduction of importance of religion over time, while in the rest they are positive and opposed to cohort effects. Actually, countries such as Portugal or Italy seem to be experiencing a religious revival that could be counterbalancing generational change. At this point, it is still not possible to determine whether generation effects are genuinely reflecting true cohort effects, as they could well be masking age effects. Period effects could in turn be masking other sources of variation, for instance the effects of cohort replacement.

Multilevel Analysis

In this section, I perform a set of hierarchical linear models to simultaneously estimate age-period-cohort effects as well as to specify an all-encompassing explanation of the variance in importance of religion across individuals, countries and overtime. The models consider the clustering of the respondents within countries and waves. This is accomplished by treating each survey as a separate context and specifying a variance component that allows the intercept to vary according to survey (following Andersen and Fetner 2008b). The models include data from 28 countries but they pertain to 106 different contexts as these countries have been surveyed over more than one wave. The models include individual-level control variables and a random intercept to account for overall mean differences in values across contexts. I have also run the analysis using just countries as second level units, therefore only considering 28 different contexts. The results are very similar, as can be observed in table A2 in the appendix. In this type of models only two APC components can be concurrently introduced, being period treated as an individual-level attribute.

Before presenting the complete explanatory multilevel model, I run bivariate correlations of the individual-level predictors with the dependent variable to explore their relationship (table 4.18). The APC variables are related to importance of religion as expected: the more intense associations are with age in years (.148) and year of birth (-.136), with opposing sign. The value of the coefficients is similar but not identical, as they are not measuring exactly the same thing. The repeated cross-sectional data of the WVS contains generational groups evolving over a span of more than twenty years. Therefore, the effects of age do not necessarily overlap with those of the year of birth. In this case, it seems that an extra-increase in importance of religion is produced as a result of becoming older, as revealed in the .012 difference among the coefficients of both correlations. Linear period effects (waves) in comparison to age and generation are much smaller (.016).

Table 4.18 Bivariate Pearson Correlations between Importance of Religion in Respondent's Life and Individual- level Predictor Variables.

	Importance of religion	
Generation		
Until 1939	0.092	***
1940-49	0.085	***
1950-59	0.055	***
1960-69	-0.021	***
1970-79	-0.044	***
1980-89	-0.070	***
Birth year	-0.136	***
Age	0.148	***
Wave	0.016	***
Male	-0.130	***
Married	0.089	***
High education	-0.080	***
Community size	-0.088	***
Catholic	0.231	***
Protestant	-0.013	***
Postmaterialism	-0.084	***

Significance: ***p<0.01; **p<0.05; *p<0.10.

The individual-level explanatory variable with which importance of religion is most associated is being Catholic (.231). Those who consider their religious denomination to

be Catholic are also highly prone to perceive religion as more relevant in their lives. Conversely, there is a tiny and negative association with being Protestant (-.013). Men are also less inclined than women to attribute importance to religion (-.130). Being married, a possible sign of following a conventional or traditional lifestyle, is positively associated to religion. As expected, the opposite happens with people living in larger cities (-.088), holding a college degree (-.080), and carrying postmaterialist values (-.084).

Table 4.19 presents a set of sequential hierarchical linear models considering countries and waves as second-level units. Model one is the empty model with just a random intercept and containing no independent variables. It is used as a baseline model. The intraclass correlation shows that the contextual level is responsible for 20.2 per cent of the variance in importance of religion. The introduction of generation effects in model 2 entails a substantive and significant reduction in deviance (of 6,989.8) with respect to the empty model. In a gradual manner, the older the generation, the more importance it gives to religion. And as we have seen in the country-by-country analysis, this pattern takes place in all nations without exception. In model 3, linear period effects are added as a second-level predictor, and they show no statistically significant impact on religion across waves. Linear period effects as such mean just a tiny non-significant 0.5 reduction in deviance. In model 4 all three APC components are simultaneously estimated, being period effects considered as a second-level characteristic. When this is done, period effects continue to be insignificant: it is not possible to account for any linear period effects. The results of introducing age in years into the model is that the differences among the youngest generations seem to blur, as if they were in fact caused by age effects. In this step, the explanatory capacity of the model increases considerably with respect to model 2 (1,223.3 deviance reduction). The effect of age is positive, implying an increase in importance of religion as people grow older, something which is in tune with the literature. In general, age effects do not erode generation ones, although they tend to reduce them.

In model 5, I include the set of individual-level fixed effects predictors which are supposed to influence religiosity, according to the literature. Being male clearly reduces the importance of religion. Conversely, married people tend to be more religious, be it a cause or a consequence of the decision to get married, or a sign of entering a new phase

in the life-cycle[37]. In this vein, the effects of age are slightly reduced with respect to the previous model, as they are somewhat freed from capturing the impact of family formation. Having received higher education does not seem to have any effects when controlled for the rest of the variables in the model. What could be the reason for this lack of effects? On the one hand, the more educated and cognitively sophisticated are inclined to question religion. However, people with a college degree also tend to have a better social position and be less threatened by existential insecurity. Therefore, education could be actually capturing the indirect effects of the personal level of existential security. As I have explicitly introduced individual's level of postmaterialism in the model, the effect of education is freed from indirectly measuring it. In fact, when postmaterialist values are excluded from the model (not shown in table 4.19), education portrays statistically significant and negative effects. It could also be that the effects of education vary very much across countries. Therefore, I will explore its interaction with country-level characteristics.

Postmaterialism is negatively bond to the importance of religion, though its coefficient is rather low. People who give priority to postmaterialist values have detached themselves more clearly from traditional values and institutions, religion being one of them. They do not need to rely that much on this traditional source of existential anxiety reduction. Having a religious denomination plays an important role in the relevance attributed to religion, be it either Catholic or Protestant. It may seem obvious, that people who do not belong or refuse to belong to a religious denomination give less importance to religion. Belonging to the Catholic Church has more effect than being Protestant. The bigger the size of the municipality where people live, the lower the importance attributed to religion. Smaller and especially rural communities tend to be more traditional in their values, and the larger the municipality the more cosmopolitan and open-minded. The introduction of this individual-level set of explanatory variables constitutes the best improvement in model's explanatory capacity of all (187,434.7 deviance reduction). All in all, the effects of generation and age remain as expected, with little change. Linear period effects at the context level continue not to have any incidence.

[37] The way of asserting the direction of causality would be using panel data instead of repeated cross-sections.

In model 6, I introduce the second-level predictor variables averaged over the period of observations for each country (time invariant). To explain the variability in the importance given to religion among this group of already developed nations, the level of income inequality is a more useful indicator than the Human Development Index (HDI) or the GDP per capita. The HDI has, as expected, a significant and negative effect (-3.58): in the more developed nations people give less relevance to religion. However, the impact of the Gini coefficient is larger (5.49), and shows that the higher the income inequality in a country, the more important religion becomes to its citizens. The threats to existential security are higher in rich nations in which wealth does not reach significant fractions of the population, and with weaker welfare networks (Inglehart 1997). These threats impel people to religion as a traditional provider of relief from existential anxiety. In fact, living in an unequal context can even affect the better-off segments of this same society. The effects of inequality are complex; they can be not only direct but indirect, and interact with other factors (as Wilkinson and Pickett 2009 suggest).

Controlling for human security indicators, Protestant countries are not significantly different from Catholic ones and countries with other predominant denominations. In this sense, it seems that the cultural explanation does not hold, as it is in fact the uneven levels of human security the true responsible for country dissimilarities in importance of religion. This is not to deny that the religious history of a country has any indirect influence on its actual levels of religiosity. Protestantism at its initial stages could have fostered the posterior economic development and material wealth of nations, following the Weberian thesis. However, nowadays the current relative levels of human security look like a better predictor of the differences in religious values among already industrially advanced nations. The degree of competition between religious cults within each country neither has any significant effect. Therefore the religious market hypothesis does not hold as means of explaining the variation in religious values in this set of countries.

The contextual level of postmaterialism does not seem to have direct effects on this group of already developed nations – not even when it is introduced as single second-level predictor variable (not shown). When these whole set of country characteristics are included in the model the deviance experiences a statistically significant reduction of

50.8, and the contextual-level variance becomes explained to a great extent. The amount of unexplained second-level variance drops from 21.6% (the intraclass correlation of model 5) to 6.4% when these time-averaged national characteristics are taken into account.

Model 7 includes the whole set of country-centered time varying covariates to explain the cross-national dynamics of importance of religion[38]. This is a much finer approach to the study of dynamic effects than using just the year/wave of the survey, as it can provide more direct measures of the dynamic causal mechanism at stake. Using a mere time trend, as when just the wave of survey indicator is included, would only capture a type of process that had the same linear trend across all nations. We have already seen that the situation is not that simple for the case of importance of religion. When analyzing the results of model 7, the most relevant finding is that the increase in HDI levels produces a reduction in the importance of religion, other things held constant. This piece of evidence is in tune with the hypothesis of real-time change in values that guides this dissertation. Once generation and age effects are controlled, we can still spot direct effects of the time-varying exogenous covariates linked to existential security. The nature of the effect is in agreement with Norris and Inglehart's general theory of secularization, in the sense that the increase in levels of existential security reduces the relevance of religion. The evidence presented here indicates that change can also happen in real-time, and not only by means of the delayed cohort replacement process.

The level of religious pluralism has also a dynamic effect on importance of religion. Countries that have seen an increase in pluralism seem to have experienced a raise in religiosity. However, besides the conventional interpretation, I would hypothesize that the effect could be related to economic migration processes that have been increasing overtime and progressively reshaping European populations. Immigrants coming from less developed countries are more devout and have different religious denominations from that of the host countries. However, testing this hypothesis would require a type of detailed analysis I cannot provide here. Other things held constant, linear period effects appear to be significant and positive, showing a slight overall trend of increase in the importance of religion across countries over time. Therefore, a slight religious revival

[38] The only exception is the predominant religious denomination of the country, which is constant over time.

could be coexisting with the broader process of secularization. In general, the inclusion of time-varying covariates does not substantially modify the effects of the pre-existent variables in the model, although it increases the impact of the time-averaged Gini coefficient and HDI. The overall improvement in model's deviance is not significant (8.8), however the intercept fixed-effects stops having a statistically significant effect.

In the next model (8), I set the slope coefficients of individual-level variables to be random (except dummy generations, which behave quite homogeneously across countries). The overall explanatory capacity of the model becomes significantly improved (a reduction in deviance of 1,284.4). However, the figures for the variance components are quite small. What is the impact on the fixed-effects side of the model? It does not affect generation or age effects, but the linear effects of the wave of the survey lose their impact. With respect to the rest of the fixed-effects, they remain almost unaltered.

Table 4.19 Estimates of Hierarchical Linear Models Predicting Importance of Religion in 28 OECD Countries (Individuals within Countries and Waves).

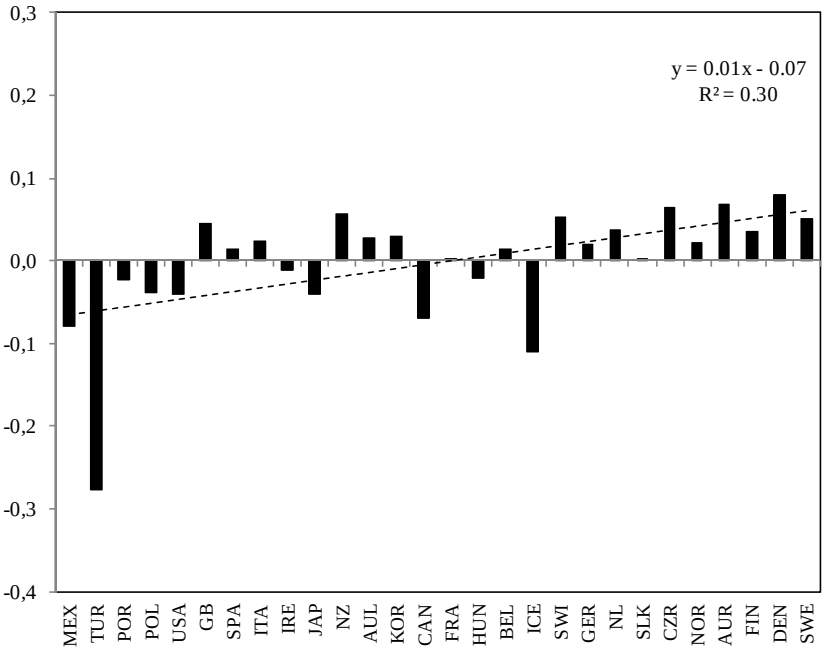
		1) Empty model		2) Individual level predictors: Generations		3) Individual level predictors: Gen.-Waves		4) Individual level predictors: APC		5) Individual level predictors: Personal characteristics		6) Context-level predictors: Time averaged		7) Context-level predictors: Time varying		8) Random slopes		9) Random slopes & Cross-level interactions	
Parameters		Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Estimates of fixed effects																			
	Intercept	2.57 ***	0.05	2.36 ***	0.05	2.25 ***	0.17	2.13 ***	0.17	1.98 ***	0.38	2.64 *	1.45	1.43	1.48	1.98	2.08	1.21	1.52
Level 1	Generation																		
Individuals	Until 1939			0.78 ***	0.01	0.78 ***	0.01	0.29 ***	0.03	0.35 ***	0.05	0.35 ***	0.05	0.35 ***	0.05	0.32 ***	0.05	0.35 ***	0.05
	1940-49			0.61 ***	0.01	0.61 ***	0.01	0.21 ***	0.03	0.27 ***	0.04	0.27 ***	0.04	0.27 ***	0.04	0.24 ***	0.04	0.27 ***	0.04
	1950-59			0.45 ***	0.01	0.45 ***	0.01	0.13 ***	0.02	0.18 ***	0.03	0.18 ***	0.03	0.18 ***	0.03	0.16 ***	0.03	0.18 ***	0.03
	1960-69			0.23 ***	0.01	0.23 ***	0.01	0.01	0.02	0.05 **	0.02	0.05 **	0.02	0.05 **	0.02	0.04 *	0.02	0.05 **	0.02
	1970-79			0.11 ***	0.01	0.11 ***	0.01	-0.02 *	0.01	-0.01	0.02	-0.01	0.02	-0.01	0.02	-0.01	0.02	-0.01	0.02
	1980-89			(ref.)		(ref.)		(ref.)		(ref.)		(ref.)		(ref.)		(ref.)		(ref.)	
	Age							0.01 ***	0.00	0.00 ***	0.00	0.00 ***	0.00	0.00 ***	0.00	0.00 ***	0.00	0.00 ***	0.00
	Male									-0.27 ***	0.01	-0.27 ***	0.01	-0.27 ***	0.01	-0.27 ***	0.01	-0.42 ***	0.06
	Married									0.10 ***	0.01	0.10 ***	0.01	0.10 ***	0.01	0.09 ***	0.01	0.10 ***	0.01
	High education									-0.01	0.01	-0.01	0.01	-0.01	0.01	-0.01	0.02	0.35 ***	0.10
	Postmaterialist									-0.04 ***	0.01	-0.04 ***	0.01	-0.04 ***	0.01	-0.03 **	0.01	-0.04 ***	0.01
	Catholic									0.64 ***	0.01	0.64 ***	0.01	0.64 ***	0.01	0.67 ***	0.04	0.64 ***	0.01
	Protestant									0.47 ***	0.01	0.47 ***	0.01	0.47 ***	0.01	0.53 ***	0.05	0.48 ***	0.01
	Community size									-0.03 ***	0.00	-0.03 ***	0.00	-0.03 ***	0.00	-0.03 ***	0.01	-0.03 ***	0.00
Level 2	*Time averaged*																		
Countries by waves	GDP per capita											0.00 *	0.00	0.00 ***	0.00	0.00 **	0.00	0.00 ***	0.00
	HDI											-3.58 *	1.87	-4.39 **	1.85	-5.56 **	2.59	-4.35 **	1.90
	Gini coefficient											5.49 ***	0.91	6.86 ***	1.00	8.75 ***	1.41	7.20 ***	1.02
	Protestant											-0.03	0.13	-0.07	0.12	0.01	0.18	-0.09	0.13
	Herfindahl index											-0.34	0.23	-0.23	0.23	-0.28	0.33	-0.29	0.24
	PDI postmat.											0.00	0.00	0.00	0.00	-0.01	0.01	-0.01 *	0.00

	Time varying																														
	GDP per capita																					0.00		0.00	0.00		0.00	0.00		0.00
	HDI																					-5.68	*	2.83	-7.60	*	3.98	-5.50	*	2.91
	Gini coefficient																					-1.60		2.71	0.02		3.82	-2.00		2.78
	Herfindahl index																					1.00	**	0.39	1.33	*	0.57	1.12	***	0.40
	PDI postmat.																					0.01		0.00	0.01		0.01	0.01	*	0.00
	Waves							0.03		0.05	0.00		0.05	0.07		0.09	0.07		0.05	0.29	***	0.11	0.18		0.15	0.28	**	0.11
Cross-level interactions	High edu. * Gini																											-1.15	***	0.31
	Male * Gini																											0.47	**	0.19
Estimates of covariance parameters																														
	Residual	0.92	***	0.00	0.87	***	0.00	0.87	***	0.00	0.87	***	0.00	0.79	***	0.00	0.79	***	0.00	0.79	***	0.00	0.76	***	0.00	0.78	***	0.00
	Intercept	0.23	***	0.04	0.25	***	0.04	0.25	***	0.04	0.25	***	0.04	0.22	***	0.05	0.07	***	0.01	0.05	***	0.01	0.09	***	0.02	0.06	***	0.01
	Age																						0.00	***	0.00					
	Male																						0.00	***	0.00	0.00	***	0.00		
	Married																						0.00	***	0.00					
	High education																						0.02	***	0.01	0.01	***	0.00		
	Postmaterialist																						0.00	***	0.00					
	Catholic																						0.06	***	0.02					
	Protestant																						0.09	***	0.03					
	Community size																						0.00	***	0.00					
Intraclass correlation		20,2	%		22.2	%		22.1	%		22.3	%		21.6	%		7.7	%		6.4	%										
Number of parameters		3			8			9			10			17			23			28			36			32				
Model comparisons																														
Deviance		340,371.8			333,382.0			333,381.5			332,158.2			144,723.5			144,672.7			144,663.8			143,379.4			144,502.5				
χ^2 Model improv. (prev. model)					6,989.8	***		0.5			1,223.3	***		187,434.7	***		50.8	***		8.8			1,284.4	***		161.3	***			
AIC		340,375.8			333,398.0			333,399.5			332,178.2			144,757.5			144,718.7			144,719.8			143,451.4			144,566.5				

Significance: ***p<0.01; **p<0.05; *p<0.10.

In the final model (9), I test two possible cross-level interactions related to the contextual level of income inequality. I want to see if the effects of first-level predictors such as education and gender are affected by the country's distribution of wealth. The negative coefficient of the cross-level interaction between individual's level of education and country's income inequality shows that in more unequal countries having a college degree reduces the importance of religion, while in more egalitarian nations – which are already less religious– it has no effect, or it can even increase religiosity levels. Figure 4.11 illustrates this cross-level interaction. The data to prepare this figure has been obtained not from multilevel analysis, but from country-by-country OLS regressions. Each country's beta coefficients for higher education are plotted and ordered according to the level income inequality of the nation to which they belong.

Figure 4.11 Effect of Having a College Degree (in OLS Betas) on Importance of Religion in Life by Country Ordered by Income Inequality (Gini Coefficient).



The slightly significant and positive effect of the interaction of gender (being a male) with income inequality indicates that in more unequal countries even male respondents tend to be more religious. I have also tested for the cross-level interactions of waves (second-level) with age and generations (first-level), however they appear not to be significant in any case. These results are not shown for the sake of simplicity.

I can finally conclude that controlling for period effects and the fact that each new generation is less religious than the former, cohorts become more religious as they age. And these results hold even when accounting for other explanatory variables at the individual and contextual levels. Period effects also play a role in the overtime change in importance of religion: countries experiencing increasing levels of human security see their religiosity levels diminish, notwithstanding the fact that there seems to be a slight trend to an increase in levels of importance of religion, *ceteris paribus*.

To verify the results obtained in table 4.19, I perform two different robustness tests. First, I run the main multilevel model (7) on a subsample composed only by individuals born from 1945 to 1964, this is, the cohort coming of age between 1963 and 1982. The reason to do this is that, in repeated cross-sectional data, the wave/year of the survey is not only capturing "pure" period effects. It measures as well the whole aggregate variation in the dependent variable between waves, which also includes potential cohort replacement effects. Period effects can then be overestimated if there is an underlying trend produced by cohort replacement, as it is potentially the case. To overcome this limitation, I replicate the main multilevel model (7) on a subsample of individuals old enough to have been surveyed over the whole period of observations, and young enough not to have died in a significant amount. Model A in table 4.20 presents the results which are basically equivalent to those of table 4.19, and validate my previous interpretations.

The second test of robustness refers to the weight the importance of religion has with respect to other spheres in respondent's life. The dependent variable I am using is the last item of a battery composed by other five items, which are the importance of the family, friends, leisure time, politics, and work. Irrespective of the evolution of the importance of religion as an isolated item, religion could have gained or lost importance in the ranking, this is, in relative terms with respect to the rest of spheres in the life of the respondent. And this fact could distort the substantive interpretation. Model B in table 4.20 shows the results for a standardized version of importance of religion, which takes into consideration its relative position with respect to the mean of all the items in the battery. The results are also equivalent to those obtained for the single item, presented in table 4.19. These tests, thus, confirm the validity of my main analysis and interpretation.

Table 4.20 Robustness checks.

		A) Only the sub-sample of cohort 1963-82			**B)** Relative importance of religion		
Parameters		Estimate		SE	Estimate		SE
Estimates of fixed effects							
	Intercept	0.938		1.556	-1.761		1,102
Level 1	Gen. 1973-82	-0.018		0.024			
Individuals	Gen. until 1939				0.361	***	0,043
	Gen. 1940-49				0.252	***	0,033
	Gen. 1950-59				0.155	***	0,026
	Gen. 1960-69				0.021		0,019
	Gen. 1970-79				-0.024	*	0,013
	Gen. 1980-89						
	Age	0.005	***	0.002	0.005	***	0,001
	Male	-0.251	***	0.012	-0.232	***	0,007
	Married	0.105	***	0.014	0.051	***	0,007
	High education	-0.011		0.015	-0.076	***	0,008
	Postmaterialist	-0.035	***	0.010	-0.067	***	0,005
	Catholic	0.634	***	0.016	0.524	***	0,009
	Protestant	0.510	***	0.021	0.377	***	0,011
	Community size	-0.027	***	0.005	-0.032	***	0,002
Level 2	*Country averaged*						
Countries by waves	GDP per capita	0.000	***	0.000	0.000	***	0,000
	HDI	-4.117	**	1.944	-2.868	**	1,379
	Gini coefficient	7.423	***	1.046	5.546	***	0,742
	Protestant	-0.072		0.131	-0.083		0,093
	Herfindahl index	-0.163		0.244	-0.158		0,173
	PDI postmat.	-0.004		0.004	-0.005	*	0,003
	Change over time						
	GDP per capita	0.000		0.000	0.000		0,000
	HDI	-5.943	*	2.965	-5.089	**	2,105
	Gini coefficient	-1.664		2.841	-0.320		2,017
	Herfindahl index	1.093	**	0.413	0.710	**	0,293
	PDI postmat.	0.008		0.005	0.004		0,003
	Waves	0.274	**	0.114	0.220	**	0,081
Estimates of covariance parameters							
	Residual	0.788	***	0.008	0.566	***	0,003
	Intercept	0.058	***	0.013	0.030	***	0,006
Intraclass correlation		6.8	%		5.0	%	
Deviance		54302.2			123361.5		
AIC		54350.2			123417.5		

Concluding Remarks

After applying controls to test the impact of the age, period and cohort components, a clear and homogenous generational decline in importance of religion emerges across all 28 OECD countries, in tune with the secularization thesis. Other things held constant, the natural process of generational replacement would tend to reduce the levels of religiosity in the long run. However, positive age effects are also observable in the data, so that the older the person gets the more important religion becomes, even controlling by generation and period effects. In this sense, ageing and cohort replacement could be counterbalancing each other, and slowing down wider overall changes. Apart from generational effects, relevant family formation influences are identified. The specification of a full explanatory model of importance of religion across countries and over time does not erode generation and age effects. In comparison, linear period effects appear weaker and heterogeneous across countries. Yet, the inclusion of time-varying covariates sheds new light into the dynamic effects of the exogenous variables. The theory of secularization based on existential security becomes corroborated: c*eteris paribus*, as countries improve their Human Development Index, religiosity becomes significantly reduced. Although there are signs of a religious revival, countries experiencing faster modernization processes secularize quicker, even when controlling for cohort replacement effects. Changes can happen in real-time, contradicting Norris and Inglehart assumptions.

The Importance of God in Life

In this section, I briefly replicate the analysis performed before, to the case of importance of God in life. This indicator is also classified as a religious value by Norris and Inglehart (2004), and measured with an importance statement (see Saris and Gallhofer 2007). In comparison with the importance of religion, the importance of God in life is perhaps more clearly linked to the subjective or private character of religiosity (Müller 2009). Moreover, this variable acquires even further significance, given that it is one of items with a larger loading on the secular/rational factor dimension of Inglehart and Welzel's analysis (2005). Therefore, the item I study here is a constitutive part of their individual modernity theory. The exact wording of the question is the following: "How important is God in your life? Please use this scale to indicate – 10 means very important and 1 means not at all important." There is a strong aggregate cross-country relationship between importance of religion in life and importance of God in life (a correlation of .92). The way in which both values evolve over time is also rather similar. Countries that have experienced a decrease in importance of religion have also seen a reduction in importance of God in life, and vice versa. The correlation of the differences overtime in these two indicators is as high as .74.

Table 4.21 shows the descriptive statistics of importance of God in life across the sample of 28 OECD countries and over the five waves of the WVS (from 1981 to 2007). By looking at each nation's last wave, sharp differences can be readily spotted, ranging from the least religious Czech Republic together with the Nordic countries, to the more God oriented Mexico, Turkey or USA. Following the same logic as in importance of religion, country-level predictors are used to offer a first bivariate explanation of differences in levels between nations (table 4.22). The results are similar to the previously analyzed importance of religion. Human security indicators capturing Inglehart and Norris idea of secularization are the best correlates, especially the Gini coefficient. A correlation of .816 indicates that aggregate differences in the importance of God across affluent societies are highly related to the country's overall level of income inequality. The HDI and GDP per capita are also significantly associated (-.582 and -.437 respectively). Neither the cultural heritage nor the religious market explanations are statistically associated. The same happens with the level of postmaterialism at the country level.

Table 4.21 Average Scores of Importance of God in Respondent's lives in 28 OECD countries, 1981-07.

	1981-84	1989-93	1994-99	1999-04	2005-07	Diff.	Slope	Intercept
Spain	6.39	6.14	6.88	5.88	5.34	-1.05*	-0.24	6.84
Norway	5.19	4.55	4.65	-	4.21	-0.98*	-0.28	5.36
Netherlands	5.35	4.90	-	4.93	4.55	-0.80*	-0.24	5.53
Belgium	5.95	5.22	-	5.19	-	-0.76*	-0.38	6.21
Ireland	8.03	7.93	-	7.47	-	-0.55*	-0.28	8.36
Germany	-	5.00	5.12	5.04	4.47	-0.53*	-0.17	5.33
Denmark	4.47	3.92	4.02	-	-	-0.45*	-0.22	4.59
New Zealand	-	-	5.67	-	5.35	-0.33*	-0.33	6.00
Switzerland	-	6.70	6.02	-	6.41	-0.29*	-0.14	6.66
Iceland	6.45	6.11	-	6.24	-	-0.21	-0.10	6.48
USA	8.43	8.06	8.14	8.47	8.22	-0.20*	0.00	8.26
Canada	7.37	6.91	-	7.18	7.17	-0.20†	-0.03	7.24
Sweden	4.08	3.75	3.94	4.10	3.91	-0.17	0.00	3.95
Great Britain	5.69	5.25	5.26	4.92	5.59	-0.10	-0.05	5.50
France	4.72	4.44	-	4.40	4.67	-0.04	-0.02	4.60
Australia	6.13	-	5.66	-	6.12	0.00	0.00	5.97
South Korea	-	-	-	5.48	5.57	0.09	0.09	5.39
Czech Republic	-	3.54	4.01	3.63	-	0.10	0.05	3.63
Poland	-	8.60	-	8.39	8.73	0.13†	0.07	8.44
Japan	4.83	4.79	4.78	5.02	5.01	0.18	0.06	4.71
Austria	-	6.26	-	6.61	-	0.35*	0.35	5.92
Hungary	4.97	5.41	5.40	5.36	-	0.39*	0.12	4.99
Mexico	9.01	8.13	7.89	9.45	9.43	0.42*	0.22	8.14
Finland	5.60	5.60	5.86	5.96	6.03	0.43*	0.12	5.44
Turkey	-	8.84	9.40	9.25	9.36	0.53*	0.14	8.85
Slovakia	-	5.97	6.60	6.63	-	0.66*	0.33	5.74
Italy	6.96	7.15	-	7.43	7.84	0.88*	0.29	6.62
Portugal	-	6.72	-	7.88	-	1.16*	1.16	5.56
Average	6.09	6.00	5.84	6.30	6.21	-0.05	0.02	6.08
SD	1.40	1.53	1.54	1.64	1.76	0.54		
Correlations								
Slope - Intercept		-0.02						

Significance: * p<0.05; two-tailed T-test for the comparison of averages.
† p<0.05; one-tailed T-test.

Source: World Values Surveys, pooled 1981-2007.

In comparative terms, the country with a higher decrease in the importance attributed to God in life is Spain (-1.05), followed by Norway (-0.98). The Netherlands and Belgium

come next with -0.80 and -0.76 respectively. In 15 of the total 28 countries under scrutiny (54%) there has been a decrease in importance of God. However, this decrease has only been statistically significant in 11 cases (39%), as determined by the T-test for the comparison of averages. In the rest of countries the figure is positive (43%), but only statistically significant in nine of them (32%). Nevertheless, those in which this increase has been most prominent are Portugal (1.16), Italy (0.88), Slovakia (0.66), and Turkey (0.53). Which are the reasons behind the differences in the evolution over time?

Table 4.22 Bivariate Pearson Correlations between Importance of Religion in the Last Wave and Country-level Predictors.

	Importance of God, last wave	
HUMAN SECURITY		
Gini coefficient, mid 2000	0.816	***
HDI, mid 2000	-0.582	***
GDP per head, 2008	-0.437	**
RELIGIOUS DENOMINATION		
Catholic	0.291	
Protestant	-0.365	
RELIGIOUS PLURALISM		
Herfindahl index	0.208	
LEVEL OF POSTMATERIALISM		
PDI, last wave	-0.125	
Importance of Religion, last wave	0.958	***

Significance: ***p<0.01; **p<0.05; *p<0.10.

Table 4.22 shows the dynamic correlates of importance of God across waves and countries. The negative correlation with GDP per capita indicates that countries experiencing higher economic growth as well those that have seen larger decreases in God's importance. The table also shows a high association between the two religious values: importance of religion and importance of God.

Table 4.23 Bivariate Pearson Correlations between the Evolution of Importance of Religion and the Evolution of National Context Variables.

	Evolution of Importance of God
Diff. GDP per head *(1980-2008)*	-0.604 ***
Diff. HDI *(1980-2010)*	0.118
Diff. Gini coefficient *(mid 1980 - mid 2000)*	0.284
Diff. PDI *(WVS 1st-5th wave)*	-0.225
Diff. Importance of Religion *(WVS 2nd-5th wave)*	0.739 ***

Significance: ***p<0.01; **p<0.05; *p<0.10.

From the country-by-country regression analysis presented in tables 4.24 and 4.25, where only cohort and period components are considered, it is possible to appreciate constant and monotonic generation effects affecting all nations. I have performed gamma regressions due to the shape of the distribution of the dependent variable (figures A1 and A2 in the appendix). All the dummies for the generational groups are significant, positive and pointing into the direction of gradual process of secularization. Taking the youngest cohort as the reference category, each older cohort gives more importance to God than the preceding one. And this happens in every country in a similar fashion.

A different picture is that of period effects. Taking the first wave of each country as reference category, in 18 out of 28 nations, period effects are positive. This means that in each successive wave people have given more importance to God; generations have become a little bit more religious. This process runs in the opposite direction of the intergenerational secularizing pattern. In five out of 28 cases, period effects are consistently negative, so that period and generation trends reinforce each other and go in the direction of secularization. In two cases there are mixed positive and negative effects, and in the three remaining cases there are no significant period effects at all. At this stage however, it is not possible to state whether period effects are genuine, given that I am still not concurrently controlling for the three APC components, and the rest of potential confounders.

Table 4.24 Coefficients for Gamma Models Predicting Importance of God in Life by Country.

		AUL	AUR	BEL	CAN	CZR	DEN	FIN	FRA	GB	GER	HUN	ICE	IRE	ITA
Constant		1.647*** (0.023)	1.713*** (0.019)	1.476*** (0.026)	1.852*** (0.016)	0.975*** (0.028)	1.066 *** (0.037)	1.722*** (0.016)	1.293*** (0.030)	1.385*** (0.025)	1.404*** (0.016)	1.603*** (0.019)	1.581*** (0.023)	1.876*** (0.016)	1.823*** (0.015)
Generation	Until 1939	0.317*** (0.035)	0.287*** (0.034)	0.470*** (0.029)	0.245*** (0.021)	0.730*** (0.062)	0.722*** (0.044)	0.381*** (0.053)	0.465*** (0.040)	0.551*** (0.029)	0.491*** (0.029)	0.564*** (0.053)	0.513*** (0.039)	0.311*** (0.020)	0.214*** (0.020)
	1940-49	0.282*** (0.031)	0.202*** (0.027)	0.403*** (0.026)	0.238*** (0.019)	0.590*** (0.041)	0.516*** (0.046)	0.304*** (0.031)	0.379*** (0.035)	0.451*** (0.028)	0.359*** (0.024)	0.491*** (0.044)	0.451*** (0.033)	0.308*** (0.021)	0.164*** (0.017)
	1950-59	0.254*** (0.028)	0.183*** (0.027)	0.373*** (0.026)	0.188*** (0.017)	0.460*** (0.038)	0.413*** (0.044)	0.245*** (0.028)	0.277*** (0.032)	0.379*** (0.027)	0.229*** (0.021)	0.301*** (0.042)	0.367*** (0.030)	0.260*** (0.019)	0.140*** (0.015)
	1960-69	0.137*** (0.024)	0.077*** (0.026)	0.232*** (0.025)	0.133*** (0.015)	0.176*** (0.035)	0.244*** (0.039)	0.148*** (0.024)	0.112*** (0.031)	0.254*** (0.025)	0.132*** (0.021)	0.110*** (0.039)	0.268*** (0.026)	0.186*** (0.018)	0.056*** (0.015)
	1970-79	0.047* (0.023)	0.055** (0.025)	0.081*** (0.024)	0.047*** (0.014)	-0.009 (0.035)	0.094** (0.038)	0.087*** (0.023)	0.057* (0.030)	0.143*** (0.024)	0.036* (0.019)	0.003 (0.038)	0.118*** (0.024)	0.087*** (0.017)	0.015 (0.015)
	1980-89	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
Period	Wave 1 (1981-84)	(ref.)	-	(ref.)	(ref.)	-	(ref.)	(ref.)	(ref.)	(ref.)	-	(ref.)	(ref.)	(ref.)	(ref.)
	Wave 2 (1989-93)	-	(ref.)	-0.068*** (0.022)	-0.036** (0.016)	(ref.)	0.017 (0.030)	-0.149*** (0.031)	0.013 (0.030)	-0.025 (0.024)	(ref.)	-0.161*** (0.037)	0.022 (0.022)	0.023* (0.014)	0.058*** (0.014)
	Wave 3 (1994-99)	-0.023 (0.021)	-	-	-	0.181*** (0.032)	-	-0.073*** (0.025)	-	0.060** (0.026)	0.123*** (0.019)	-0.071* (0.036)	-	-	-
	Wave 4 (1999-04)	-	0.093*** (0.017)	-0.011 (0.024)	0.036** (0.016)	0.123*** (0.028)	0.126*** (0.032)	-0.069*** (0.025)	0.058** (0.028)	0.004 (0.027)	0.089*** (0.019)	-0.080** (0.034)	0.097*** (0.021)	0.011 (0.014)	0.125*** (0.014)
	Wave 5 (2005-07)	0.055** (0.023)	-	-	0.042*** (0.016)	-	-	-0.022 (0.024)	0.146*** (0.032)	0.186*** (0.027)	0.007 (0.019)	-	-	-	0.199*** (0.017)
	Log likelihood	-12.867.5	-8.456.7	-14.837.5	-20.765.6	-11.394.4	-7.482.2	-12.389.1	-11.819.4	-15.089.5	-24.191.1	10.141.0	7.228.5	9.797.5	-18.619.2
	Deviance	2.269.4	997.4	2.737.7	2.299.4	3.585.7	1.642.3	1.717.3	2.822.3	2.819.8	5.421.2	2.316.8	740.1	514.1	1.553.6
	(1/df) Pearson	0.311	0.204	0.331	0.177	0.708	0.451	0.250	0.455	0.353	0.419	0.429	0.189	0.096	0.139
	Observations	N=4,643	N=2,959	N=5,578	N=7,011	N=5,020	N=3,125	N=4,492	N=4,725	N=5,676	N=9,370	N=3,836	N=2,560	N=3,212	N=6,236

Dependent variable: Importance of God in Life (ranging from 1 ‘not at all important’ to 10 ‘very important’).
Significance: ***p<0.01; **p<0.05; *p<0.10.

Table 4.25 Coefficients for Gamma Models Predicting Importance of God in Life by Country.

		JAP	KOR	MEX	NL	NOR	NZ	POL	POR	SLK	SPA	SWE	SWI	TUR	USA
Constant		1.574*** (0.017)	1.693*** (0.015)	2.199*** (0.006)	1.393*** (0.030)	1.259*** (0.031)	1.671*** (0.028)	2.106*** (0.009)	1.768*** (0.017)	1.618*** (0.022)	1.583*** (0.015)	1.010*** (0.035)	1.710*** (0.020)	2.159*** (0.007)	2.063*** (0.010)
Generation	Until 1939	0.218*** (0.067)	0.609 (0.421)	0.123*** (0.036)	0.484*** (0.039)	0.682*** (0.043)	0.267*** (0.078)	0.130*** (0.020)	0.282*** (0.036)	0.449*** (0.050)	0.417*** (0.017)	0.626*** (0.049)	0.338*** (0.031)	0.0584* (0.034)	0.122*** (0.013)
	1940-49	0.233*** (0.034)	0.180 (0.129)	0.068*** (0.016)	0.413*** (0.038)	0.519*** (0.038)	0.176*** (0.052)	0.103*** (0.014)	0.235** (0.029)	0.359*** (0.032)	0.345*** (0.016)	0.520*** (0.038)	0.295*** (0.028)	0.047*** (0.015)	0.117*** (0.012)
	1950-59	0.208*** (0.026)	0.113** (0.044)	0.067*** (0.011)	0.300*** (0.035)	0.420*** (0.036)	0.210*** (0.046)	0.089*** (0.013)	0.212*** (0.027)	0.251*** (0.030)	0.324*** (0.015)	0.390*** (0.036)	0.249*** (0.025)	0.054*** (0.009)	0.094*** (0.012)
	1960-69	0.113*** (0.023)	0.003* (0.032)	0.040*** (0.009)	0.184*** (0.031)	0.225*** (0.031)	0.040 (0.040)	0.007 (0.012)	0.179*** (0.027)	0.120*** (0.027)	0.225*** (0.015)	0.241*** (0.031)	0.161*** (0.023)	0.036*** (0.008)	0.031*** (0.011)
	1970-79	0.084*** (0.024)	0.021 (0.027)	0.040*** (0.008)	0.080*** (0.030)	0.116*** (0.031)	-0.033 (0.038)	0.001 (0.011)	0.076*** (0.025)	0.054** (0.025)	0.080*** (0.014)	0.122*** (0.032)	0.105*** (0.022)	0.006 (0.006)	0.037*** (0.010)
	1980-89	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)		(ref.)
Period	Wave 1 (1981-84)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	-	-	-	-	(ref.)	(ref.)	-	-	(ref.)
	Wave 2 (1989-93)	-0.131*** (0.029)	dropped collinear.	-0.132*** (0.009)	-0.015 (0.029)	-0.035 (0.029)	-	(ref.)	(ref.)	(ref.)	0.021 (0.013)	0.029 (0.035)	(ref.)	(ref.)	-0.042*** (0.009)
	Wave 3 (1994-99)	-0.106*** (0.027)	-	-0.154*** (0.008)	-	0.071** (0.031)	(ref.)	-	-	0.155*** (0.023)	0.172*** (0.018)	0.146*** (0.036)	-0.054*** (0.019)	0.068*** (0.008)	-0.013 (0.010)
	Wave 4 (1999-04)	-0.063** (0.026)	-	0.024*** (0.009)	0.046 (0.030)	-	-	-0.006 (0.010)	0.185*** (0.017)	0.164*** (0.022)	0.035** (0.015)	0.218*** (0.037)	-	0.057*** (0.007)	0.041*** (0.011)
	Wave 5 (2005-07)	-0.052** (0.026)	-	0.028*** (0.009)	0.016 (0.031)	0.038 (0.033)	-0.044 (0.028)	0.041*** (0.010)	-	-	-0.028 (0.018)	0.175*** (0.037)	0.024 (0.019)	0.072*** (0.009)	0.015 (0.011)
	Log likelihood	-12.868.7	-6.490.9	-27.662.1	-10.794.8	11.006.3	-5.496.3	-12.449.8	-6.431.4	-9.798.8	-30.627.1	-11.616.7	-10.812.4	-27.148.1	-25.058.3
	Deviance	1.946.7	974.7	993.9	2.501.6	2.411.1	1.183.9	453.8	592.2	1.600.0	3.781.0	2.992.6	1.364.5	834.9	1.446.8
	(1/df) Pearson	0.280	0.282	0.059	0.421	0.461	0.392	0.063	0.159	0.277	0.225	0.563	0.221	0.043	0.092
	Observations	N=4,978	N=2,397	N=8,751	N=4,177	N=4,381	N=2,032	N=3,955	N=2,164	N=3,441	N=10,937	N=4,932	N=3,788	N=8,421	N=8,055

Dependent variable: Importance of God in Life (ranging from 1 ‘not at all important’ to 10 ‘very important’).
Significance: ***p<0.01; **p<0.05; *p<0.10.

Table 4.26 R-squared Values from Stepwise OLS Models Predicting Importance of God in Life.

	AUL	AUR	BEL	CAN	CZR	DEN	FIN	FRA	GB	GER	HUN	ICE	IRE	ITA
Generations only	0.088***	0.106***	0.095***	0.077***	0.058***	0.094***	0.040***	0.166***	0.139***	0.168***	0.012***	0.160***	0.151***	0.119***
Generations and waves	0.114***	0.164***	0.139***	0.130***	0.120***	0.123***	0.126***	0.230***	0.173***	0.210***	0.118***	0.290***	0.166***	0.165***
Change in R squared	0.027***	0.058***	0.043***	0.054***	0.061***	0.029***	0.087***	0.064***	0.034***	0.043***	0.106***	0.130***	0.015***	0.046***
Improvement	23.5%	35.4%	31.3%	41.2%	51.2%	23.8%	68.5%	27.8%	19.9%	20.3%	89.7%	44.9%	9.2%	27.7%
Number of waves	3	2	3	4	3	3	5	4	5	4	4	3	3	4

	JAP	KOR	MEX	NL	NOR	NZ	POL	POR	SLK	SPA	SWE	SWI	TUR	USA
Generations only	0.065***	0.044***	0.008***	0.108***	0.141***	0.093***	0.072***	0.043***	0.051***	0.200***	0.118***	0.149***	0.016***	0.053***
Generations and waves	0.288***	0.087***	0.081***	0.138***	0.238***	0.098***	0.093***	0.067***	0.113***	0.272***	0.252***	0.228***	0.018***	0.109***
Change in R squared	0.162***	0.043***	0.073***	0.031***	0.097***	0.006***	0.021***	0.023***	0.062***	0.071***	0.135***	0.079***	0.002**	0.056***
Improvement	71.3%	49.7%	90.4%	22.0%	40.6%	5.7%	23.0%	34.8%	54.7%	26.3%	53.4%	34.6%	10.7%	51.7%
Number of waves	5	5	5	4	4	2	4	2	3	5	5	3	3	5

Dependent variable: Importance of God in Life (ranging from 1 ‘not at all important’ to 10 ‘very important’).
Significance: ***p<0.01; **p<0.05; *p<0.10.

Multilevel Analysis

In table 4.27, I replicate the same type of hierarchical linear models as in the case of importance of religion. In this multilevel analysis countries-by-waves are considered to be the second level units. As said earlier, with this procedure it is possible to simultaneously model age, period and cohort effects. Model 1 is the empty model, which I use as a benchmark for comparison. By looking at the intraclass correlation we can see that the amount of variance at the country level is 22.5%. When generational units alone are included in the model (2), all of them appear to have a statistically significant impact, so that the older the generation, the more important is God in their lives. The improvement in deviance of the model with respect to the empty one is substantial (7,854.2). In the next step (model 3), the wave variable is introduced as a second level predictor. Its positive effect is not statistically significant. Its inclusion does not contribute to a better explanation of importance of God. In model 4, I include the impact of age, and therefore the three APC effects are simultaneously accounted. In order to capture a potential curvilinear effect of age, I add age squared to the equation. The results show a positive curvilinear age effect. The older the person gets, the more important God becomes, and this increase is even larger in the older age groups. The inclusion of age reduces generational effects. However, they are still significant except from the case of the sixties' generation, which now seems to attribute the same importance to God than the youngest one. The second younger generation happens to be less religious than the youngest one, used as reference category. Period effects do not seem to interfere in these relationships.

When the whole set of individual level characteristics are introduced (model 5), they suppress the impact of age, and also reduce generational effects. The only generations that can be clearly distinguished to have higher levels of importance of God than the rest are the three oldest ones, probably due to true socialization effects. The impact of each personal characteristics works as expected. Being male, having higher education, and holding postmaterialist values reduce importance of God in life, whereas, being married and having a religious affiliation increase it. Those with Catholic denomination tend to give more importance to God; Protestants too but the effect is not that intense. The smaller the municipality in which the respondent lives, the more importance s/he gives to God in life.

In model 6, I include the group of country characteristics averaged across waves. I follow this procedure to capture the static or constant differences in levels between countries. In this case, HDI levels have a significant effect in explaining variance across countries. The higher the human development, the lower the religiosity level of the country. Income inequality is again a key explanatory factor of the differences between this cluster of countries: the more egalitarian the nation, the less religious. The cultural heritage approach is again refuted. Once we control for the level of development, Protestant countries are not less religious than the reference category (Catholic and the rest). The effect of religious pluralism measured by the Herfindahl index has the opposite effect as the usually hypothesized by the religious market theory. More religious pluralism in a society seems to reduce the importance of God. This result is in tune with similar findings in the literature, which have tried to test the applicability of the religious market theory outside the US (for example Draulans and Halman 2003).

In the next step (model 7), I introduce the dynamic effect of those same contextual variables over the period of observations. In order to avoid collinearity, I do not enter the variables in their natural format. I center their value to the group average; the country average. The most important finding is that the increase in HDI generates a significant reduction in importance of God in life. This evidence is in tune with Norris and Inglehart's thesis of secularization. Besides that, the increase in religious pluralism seems to increase the importance of God, probably because more pluralism means the incorporation of migrants coming from less modern societies carrying traditional religious patterns. When controlling for all these contextual variables, period effects happen to show some small but positive significant effects.

In model 9 I test whether the effect of being male and having a college degree varies across nations depending on their level of income inequality. My hypothesis is that even males will be more religious in unequal countries. In the same vein, the effects of having a college degree could have more impact on unequal countries, given that in these contexts it may be a clearer indicator of critical thinking, emancipation and existential security. The data does not support this last hypothesis. However, the effects of gender seem to be conditioned on country's inequality: being male increases importance of God in life especially in unequal contexts.

Table 4.27 Estimates of Hierarchical Linear Models Predicting Importance of God in 28 OECD Countries (Individuals within Country-Waves).

		1) Empty model		**2) Individual level predictors:** Generations		**3) Individual level predictors:** Gen.-Waves		**4) Individual level predictors:** APC		**5) Individual level predictors:** Personal		**6) Context-level predictors:** Group averaged		**7) Context-level predictors:** Change over time		**8) Random slopes**		**9) Random slopes & Cross-level interactions**	
Parameters		Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Estimates of fixed effects																			
	Intercept	6.09 ***	0.15	5.44 ***	0.16	4.92 ***	0.38	4.15 ***	0.40	4.26 ***	1.30	6.85	4.52	2.74	4.64	5.15	6.26	2.76	4.89
Level 1	Generation																		
Individuals	Until 1939			2.23 ***	0.03	2.23 ***	0.03	0.98 ***	0.10	0.64 ***	0.19	0.64 ***	0.19	0.64 ***	0.19	0.47 **	0.22	0.64 ***	0.19
	1940-49			1.74 ***	0.03	1.74 ***	0.03	0.70 ***	0.08	0.48 ***	0.14	0.49 ***	0.14	0.49 ***	0.14	0.37 **	0.15	0.49 ***	0.14
	1950-59			1.34 ***	0.03	1.34 ***	0.03	0.49 ***	0.06	0.40 ***	0.10	0.40 ***	0.10	0.40 ***	0.10	0.32 ***	0.10	0.40 ***	0.10
	1960-69			0.70 ***	0.02	0.70 ***	0.02	0.07	0.05	0.11	0.07	0.11	0.07	0.11	0.07	0.08	0.07	0.11	0.07
	1970-79			0.29 ***	0.02	0.29 ***	0.02	-0.08 ***	0.03	0.02	0.05	0.02	0.05	0.02	0.05	0.01	0.05	0.02	0.05
	1980-89																		
	Age							0.04 ***	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01
	Age²							0.00 ***	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Male									-0.82 ***	0.02	-0.82 ***	0.02	-0.82 ***	0.02	-0.82 ***	0.04	-1.70 ***	0.17
	Married									0.26 ***	0.03	0.26 ***	0.03	0.26 ***	0.03	0.24 ***	0.04	0.26 ***	0.03
	High education									-0.14 ***	0.03	-0.14 ***	0.03	-0.14 ***	0.03	-0.16 **	0.06	0.21	0.29
	Postmaterialist									-0.15 ***	0.02	-0.15 ***	0.02	-0.15 ***	0.02	-0.14 ***	0.03	-0.16 ***	0.02
	Catholic									2.16 ***	0.03	2.16 ***	0.03	2.16 ***	0.03	2.24 ***	0.17	2.16 ***	0.03
	Protestant									1.55 ***	0.04	1.55 ***	0.04	1.55 ***	0.04	1.74 ***	0.21	1.56 ***	0.04
	Community size									-0.05 ***	0.01	-0.05 ***	0.01	-0.05 ***	0.01	-0.05 **	0.02	-0.05 ***	0.01
Level 2	*Country averaged*																		
Countries by waves	GDP per capita											0.00 **	0.00	0.00 ***	0.00	0.00 ***	0.00	0.00 ***	0.00
	HDI											-12.24 **	5.95	-14.17 **	5.79	-21.91 ***	7.78	-14.16 **	6.11
	Gini coefficient											18.74 ***	2.77	22.67 ***	3.15	28.88 ***	4.27	22.12 ***	3.33
	Protestant											-0.48	0.39	-0.51	0.39	-0.77	0.53	-0.56	0.41
	Herfindahl index											-1.90 **	0.72	-1.39 *	0.74	-1.76 *	1.01	-1.55 *	0.78
	PDI postmat.											0.00	0.01	-0.01	0.01	-0.02	0.02	-0.02	0.01

	Change over time																											
	GDP per capita																			0.00		0.00	0.00		0.00	0.00		0.00
	HDI																			-17.79	*	9.67	-16.22		13.07	-17.73	*	10.21
	Gini coefficient																			-4.37		10.02	9.05		13.57	-4.93		10.58
	Herfindahl index																			2.47	*	1.26	2.71		1.74	2.65	*	1.33
	PDI postmat.																			0.01		0.01	0.01		0.02	0.01		0.01
	Waves							0.17		0.11	0.11		0.12	0.24		0.32	0.24		0.17	0.95	***	0.34	0.83	*	0.46	0.94	**	0.36
Cross-level interactions	High edu. * Gini																									-1.18		0.89
	Male * Gini																									2.78	***	0.52
Estimates of covariance parameters																												
	Residual	8.21	***	0.03	7.76	***	0.03	7.76	***	0.03	7.77	***	0.03	6.96	***	0.04	6.96	***	0.04	6.96	***	0.04	6.67	***	0.04	6.93	***	0.04
	Intercept	2.38	***	0.33	2.62	***	0.37	2.56	***	0.36	2.52	***	0.36	2.40	***	0.53	0.62	***	0.14	0.52	***	0.11	0.80	***	0.21	0.57	***	0.13
	Age																						0.00	***	0.00			
	Male																						0.05	***	0.02	0.03	**	0.01
	Married																						0.05	***	0.02			
	High education																						0.10	***	0.03	0.11	***	0.04
	Postmaterialist																						0.03	***	0.01			
	Catholic																						0.99	***	0.24			
	Protestant																						1.40	***	0.39			
	Community size																						0.02	***	0.00			
Intraclass correlation		22.5	%		25.2	%		24.8	%		24.5	%		25.6	%		8.1	%		6.9	%							
Number of parameters		3			8			9			11			18			24			29			37			33		
Model comparisons																												
Deviance		703480.3			695626.1			695623.9			670664.4			259625.8			259292.2			259285.0			257542.9			259136.8		
χ² Model improv. (prev. model)					7854.2	***		2.2			24959.5	***		411038.6	***		333.6	***		7.2			1742.1	***		148.2	***	
AIC		703486.3			695642.1			695641.9			670686.4			259661.8			259340.2			259343.0			257616.9			259202.8		

Significance: ***p<0.01; **p<0.05; *p<0.10.

Concluding Remarks

The analysis of the value "importance of God" tells a similar story to that of "importance of religion". Aging or life cycle events may influence the personal relevance of God, as well as dynamic contextual factors attached to the process of modernization. Age effects may counterbalance the overall intercohort reduction in religiosity, as each generation grows older. However, dynamic contextual effects may explain a similar story to that of generational differences. Contextual forces shape both cohort and periodic trends towards secularization. The increasing socioeconomic development of nations overtime finds its expression in both types of effects, notwithstanding eventual religious revivals.

Conclusion

In this part of the dissertation I documented that religious values and practices associated to the modernization process are also experiencing a real-time transformation that goes beyond the expectations of the "impressionable years" hypothesis. The acute church attendance decrease across Western European countries seems to be coming from a modification of the actual behavior of people from all cohort groups. Generational replacement does play a role; however, such pronounced changes can only be due to real-time adjustments. I have performed a detailed study of the Belgian case by concurrently controlling for the age, period and cohort components using HAPC CCREM. This analysis yielded novel evidence in contradiction with Norris and Inglehart's thesis. Period effects are contributing as much as generation effects in the reduction of Belgians' churchgoing rates. Moreover, curvilinear age effects unnoticed by those authors seem to be slowing down the processes since people tend to be more religious with age.

Evidences of real-time changes among religious values are not as straightforward as in the case of church attendance. In aggregate terms, there are countries where religious values are decreasing, and others in which they increase, or remain apparently stable. However, when the proper controls are established, clear-cut patterns of generational decline in importance of religion emerge across countries favoring the secularization thesis. Furthermore, age effects can also be spotted in the data, implying an increase in

religiosity as people get older or change their marital status. In fact, age and cohort effects could be counterbalancing each other and, as a result, slowing down the speed of secularization. In comparison to those two types of influences, linear period effects appear somewhat weaker and diversified across countries. However, when time-varying contextual covariates are included in the models, they are able to explain a share of the dynamic evolution of religious values. Countries experiencing faster socioeconomic development see how the importance of religious values diminishes quicker. All these evidences favor a less restricted approach to the dynamics of values and attitudes associated to the modernization process than that supported by Norris and Inglehart.

5. A Turn in Moral Values

"Attitudes to homosexuality have changed much since 1981 in all postindustrial societies as part of an intergenerational turn towards more tolerant values. In postindustrial societies, young people tolerate homosexuality more than their elders."

Inglehart and Welzel (2005)

5. A TURN IN MORAL VALUES

The Decline of Traditional Morality

The theory of individual modernity proposed by Ronald Inglehart establishes that socioeconomic development of nations is transforming what he called the most basic values of their populations: materialist/postmaterialist priorities, alongside religious orientations and attitudes towards moral norms. This part of the dissertation is concerned with the changes experienced in the latter of these components: traditional morality. Moral values usually derive from religious prescriptions, and refer to what is a good or bad, a proper or improper behavior in society. Beneath some traditional morals rests a particular conception of what a family should be: a biparental heterosexual union; and what purpose sexual relations should serve: procreation. The attitudes of the public in many postindustrial societies are becoming increasingly relaxed and tolerant towards the interpretation of some of these traditional moral values. These norms have gradually been weakening over time: there is abundant survey evidence that attitudes to abortion, divorce, extramarital affairs, prostitution, homosexuality and euthanasia have become increasingly more tolerant (see Inglehart and Appel 1989, Inglehart 1997, or Inglehart and Welzel 2005). The societal consequences of this change are observable in the form of rising rates of divorce, abortion, premarital sex, (reported) sexual intercourse outside marriage, uniparental families, or same-sex marriages/unions across different affluent nations. There are clear differences in moral values across age groups, and these values are also related to postmaterialism (Inglehart and Appel 1989). Young and postmaterialist people are much more permissive. At the country level, the wealthier the nation, the more tolerant its citizenry is in general.

Among the different moral norms that can be explored, here I focus on the study of attitudes towards homosexuality. Homosexual relations are more or less explicitly banned in the Judeo-Christian tradition (in the Holy Bible see passages: Genesis 18:20-33; 19:1-29, or Leviticus 20:13, among others). They neither fit into what a family should be, nor correspond to what sexual intercourse should be devoted to. Permissive attitudes to homosexuality tend to be linked with postmaterialist values (Inglehart and Appel 1989). Inglehart and Welzel (2005) explicitly refer to attitudes to homosexuality

as experiencing an intergenerational change, as well as other traditional and religious norms, and postmaterialism itself. My main interest here is to use tolerance of homosexuality as another case study to explore how supposedly age-stable predispositions do actually change over the life cycle. By studying it, I could demonstrate that other values and symbolic predispositions linked to the modernization process are as well experiencing the same "real-time" transformation as postmaterialism does, contradicting most of the literature on the subject.

Tolerance of Homosexuality: From Rejection to Acceptance

In the following pages, I explore within-cohort trends in tolerance of homosexuality, an indicator intensely related to Inglehart's individual modernity syndrome, across a wide array of countries. I will show how tolerance of homosexuality has followed a spectacular pattern of intra-cohort transformation in all of these nations, additional to that produced by generational replacement. Younger cohorts are more tolerant than older ones everywhere, but there is also a large increase in tolerance within cohorts over time neglected in previous empirical research. As part of the set of traditional cultural norms, rejection of homosexuality is assimilated early in life as a moral statement and it is supposed to remain age-stable. However, the huge amount of intra-cohort change detected, clearly questions the idea that the attachment to cultural norms is necessarily steady over the life course.

Many political values and symbolic predispositions are linked to quite constant exogenous factors, or at least factors without a particular trend. This could be the reason why stability has been overstated in the empirical literature. However, here I study an item which is attached to an exogenous factor, namely modernization, which clearly experiences a drift in a particular direction. The reason of studying tolerance of homosexuality is that it can be considered an alternative indicator to postmaterialism, in which to test my hypothesis. Authors like Andersen and Fetner (2008b) have also considered it an adequate social issue upon which to examine the postmaterialist thesis. Rejection of homosexuality is a relevant component of Inglehart and Welzel's (2005) survival/self-expression dimension of postmodernization, as I will further explain later on. Besides that, the study of attitudes towards homosexuality has gained international

relevance in recent years. There are signals that attitudes have liberalized over the past couple of decades in different nations (Inglehart and Welzel 2005, Andersen and Fetner 2008a, Brewer 2003, or Loftus 2001). Here I will provide compelling evidences that this liberalization has taken place in a systematic manner across all countries experiencing modernization processes, and that it has followed a clear pattern of within-cohort transformation additional to that produced by generational replacement.

The structure of this part is as follows. First, I explain how my dependent variable is positioned into Inglehart's general frame of analysis. Then, I contextualize it with respect to other complementary approaches to the study of attitudes to homosexuality, like sexual prejudice, social tolerance, and conservative attitudes in general. After that, I discuss the main determinants of tolerance of homosexuality, taking into account Inglehart's modernization theory as well these other perspectives which have also contributed to a substantive understanding of the issue. All these views help me in the construction of a comprehensive explanatory model of tolerance of homosexuality. The strategy of analysis is similar to that of religious values. First, I perform a country-by-country analysis employing Gamma regression techniques to de-compose period and cohort effects using the five waves of the World Values Surveys (WVS). And second, I apply two different types of multilevel models to simultaneously account for age-period-cohort effects across individuals, countries and time periods, as well as to provide an all-encompassing explanation of tolerance of homosexuality.

Modernization and Attitudes to Homosexuality

As early as in 1981, using the very first wave of the WVS, Inglehart found strong age differences in tolerance of homosexuality. He then stated that in affluent societies younger cohorts were more tolerant than their predecessors. The differences he found have persisted up to the present in many OECD countries, as I will show here. Inglehart's explanation for these differences is subsumed within his general conception of modernization. He argues that the norms that support biparental heterosexual family are weakening due to many reasons, from the existence of a welfare state, to the diminishing child mortality rates (1997). He sustains that when new ways of thinking and behaving emerge, the social groups most likely to support them are youngsters and

relatively secure people. In this respect, he argues that postmaterialists happen to tolerate much more than materialists social phenomena such as abortion, divorce, extramarital relationships, prostitution and homosexuality. However, in Inglehart's value theory major social transformations take place at the pace of generational replacement: when old materialists pass away and become substituted by younger postmaterialists, and the case of tolerance of homosexuality is no exception (see Inglehart and Appel 1989 or Inglehart and Welzel 2005). Nevertheless, aggregate changes in tolerance of homosexuality have been so acute from 1981 to 2007 in many OECD countries that this hypothesis has come to be hard to support.

As Inglehart's put it (1990), the emergence of postmaterialist values is just a part of a wider process which is transforming politics, religious orientations, sexual roles and norms of advanced industrial societies. Inglehart argues that these changes are related to a common worry: the need of a feeling of security that has been traditionally provided by religion and absolute cultural norms. The increasing levels of material well-being and security have eroded the feeling of vulnerability in many societies. This fact has driven to the diffusion of secular and postmaterialist orientations which give less importance to religious norms and traditional cultures, especially if those norms constrain individual self-expression. As a consequence, Inglehart and Welzel (2005) sustain that the prohibition of homosexuality is eroding in advanced industrial societies as individuals acquire a humanist character which accentuates the right of people to choose their own lifestyle. These authors explicitly refer to attitudes towards homosexuality as experiencing an intergenerational change, as well as other traditional and religious norms, and the very postmaterialist values.

In an article from 1989, Inglehart and Appel more extensively reflect on the reasons for the decline in traditional religious, social and sexual norms in advanced industrial societies, from which rejection of homosexuality is a part of. The first motive is the generalized growth of existential security across affluent societies. Existential security is supposed to diminish the need for absolute norms. While individuals under high stress have a need for rigid and predictable rules, postmaterialists can tolerate more diversity given that they have been socialized under conditions of relative security. In their own words: "The psychological costs of deviating from whatever norms one grew up with are harder to bear if you are under stress than if you feel secure". The second

reason is the erosion of the functions that these norms were supposed to fulfill. Many religious and moral norms are oriented to protect the heterosexual traditional family as the essential productive and reproductive unit of society. The functions of the family come to be less crucial with the extension of the welfare state and the reduction of child mortality. Public institutions start to provide what once was exclusively supplied by the family unit. Perhaps the rage of God against Sodom could be understood in the context of an agrarian society suffering from soaring child mortality and urging for biological survival, but not any more in the postindustrial setting of a welfare democracy. The basis for banning sex outside marriage or sexual intercourse not oriented to procreation started to crumble, and so the reasons to blame homosexuality. The third explanation for the decline in traditional norms is cognitive consistency: a psychological human need to look for congruence between everyday life experiences and the world view and values. Nowadays, there is a cognitive mismatch between the traditional normative system, and the world in which most people live. As Inglehart and Appel mention: "the daily life experience of people today is basically different from the kind of life experience that shaped the Judaeo-Christian tradition". Therefore, most social norms, symbols and world views of religious traditions are not any more as appealing and convincing as they were before.

In a more general sense, attitudes to homosexuality are incardinated in the human development sequence proposed by Inglehart and Welzel (2005). This sequence starts with socioeconomic modernization that produces a change in cultural values, which in turn creates pressures at the societal level to further democratize institutions and liberalize norms and legislations. Socioeconomic development of nations is supposed to boost existential security levels, which help individuals to free from the material limitations that constraint their life choices. Values of the population then start moving beyond the mere survival worries, and self-expression concerns flourish. Self-expression is an amalgamation of values that include social tolerance, life satisfaction, public expression and aspirations for personal liberty. The experience of autonomy associated to the "knowledge society" characterized by occupational diversification and a knowledge intensive economy is also important to produce self-expression values. The final effects of socioeconomic modernization on cultural patterns are to generate a change towards questioning institutional authority and demanding autonomy in one's own life (Inglehart and Welzel 2005). The implication is that this greater tolerance and

respect for individuality fosters the tolerance of groups once marginalized in society due to their gender, race, sexuality, or other identity factors. In this case, it increases tolerance of homosexuals.

The centrality of tolerance of homosexuality in Inglehart's framework of analysis is also empirically grounded. As a measure of underlying value orientations, Inglehart (1990) initially relied on one dimension extracted from a factor analysis of several indicators of the WVS. This dimension he called it "traditional/secular" values. He identified three groups of values according to the magnitude of their loadings. The first set was related to monotheism, the second to the inviolability of the family, and the third to public order. It was in the second group category, inviolability of the family, in which tolerance of homosexuality was subsumed. This group of topics concerned attitudes to extramarital relations, adultery, prostitution and homosexuality. There were also items related to the ten commandments, as well as issues linked to monotheism, showing that responses to these topics were related to believing in God or not. In Inglehart and Welzel's (2005) last approach to the general dimensions of values, they refined previous analysis and established two axes for the development of modernity: the former "traditional/rational-secular", and a new "survival/self-expression" one. While the transition from traditional to secular-rational values defines the passage from agrarian to industrial societies, the evolution from survival to self-expression values corresponds to the path from an industrial to a postindustrial setting. It is precisely in this second axis of survival/self-expression values in which they located tolerance of homosexuality. Survival values emphasize economic and physical security over self-expression and quality of life, a low feeling of happiness, considering homosexuality as never justifiable, not having signed a petition, and a low social trust. The opposite positions on these items showed self-expression values.

Inglehart and Appel (1989) argue that major changes in traditional norms do not take place immediately. Cultural norms, they say, are supposed to be strongly internalized at an early age, and enforced with pre-rational sanctions. They use the example of divorce, and argue that the opposition to divorce does not simply reflect the rational calculation that the family is an important economic unity to justify why people should stay married. Instead, divorce is framed as a question of good and evil. In their own words: "The norms that constrain people's behavior even when they want to do something else

are the norms that are taught as absolute rules, and inculcated so that their consciences torture them if they are violated". The same argument could apply to homosexuality: people are not presented with rational arguments about the necessity to reject gay sex given that it does not serve the purpose of reproduction, rather they are taught to think of it as something inacceptable according to moral criteria. These types of absolute norms, they say, tend to change following an intergenerational pattern. As they are assimilated early in life through an emotional process, they have the tendency to remain age-stable so that societal changes finally come out from cohort replacement.

Inglehart and Appel (1989), when reviewing age differences in attitudes to homosexuality, explicitly suggest that the true reason beneath them is a major intergenerational shift in religious orientations, excluding both period and age effects. When analyzing data from the first wave of the WVS, they argue that the life cycle interpretation seems highly implausible: "it not only implies that the young will be just as intolerant of homosexuality as their elders when they get older, it also implies that in most of these countries, the majority of those who are now over 65 were more tolerant of homosexuality 40 or 50 years ago. This seems extremely unlikely, in light of social history." In the same vein but more recently, Inglehart and Welzel (2005) rule out age and period effects when studying the huge increase in tolerance up to the fourth wave of the WVS. They admit that countries experiencing modernization are those whose tolerance increases more over time: "The 50% of the population of the 17 richest countries in the world rejected homosexuality in 1981, while only 26% of them did so twenty years later". This evidence should imply a questioning of the socialization hypothesis, as those acute changes cannot be explained by cohort replacement alone. Those extreme changes within affluent countries were not likely to happen unless people were adjusting their morals in real-time.

Precisely, what I argue here is that period effects related to tolerance of homosexuality are as deep as generational ones, and that this fact has been neglected in Inglehart's analysis and in the empirical literature in general, with the recent exception made of Anderson and Fetner (2008a). These authors make a longitudinal analysis of tolerance of homosexuality in Canada and the USA. Apart from the classical generational differences, they find relevant attitude change within cohorts over time. They vaguely attribute these changes to transformations in the political and social context in favour of

gay visibility and rights. Besides country-specific interpretations suggested by Andersen and Fetner, I argue that these changes are basically embedded into the more general process of individual modernity and become affected by the exogenous covariates of this macro-social transformation. Moreover, period effects could not only take the form of short-term influences but also of a consistent trend. A real-time growing acceptance of homosexuality is not restricted to Canada and USA, but it affects the majority of affluent societies experiencing modernization over the years. Here I will show how a great deal of the increasing acceptance of homosexuality in affluent societies comes not from cohort replacement neither from generational effects, but from self-actualization of people's beliefs (period effects). I explicitly demonstrate that significant change in values and abstract or symbolic attitudes can take place during adult years.

Alternative Conceptualizations

Tolerance, Trust, and Inequality

Apart from Inglehart's analytical framework, attitudes towards homosexuality have been studied from other points of view, and their relevance as object of analysis has been widely acknowledged. A study by Andersen and Fetner (2008b) approach the analysis of tolerance of homosexuality using the more general concept of tolerance or social tolerance. Quoting Popper, Mulligan (2010) defines tolerance as the acceptance of the views and lifestyles different from one's own. In this respect, tolerance is often referred as accepting or legitimating people of a different race, ethnicity, religion, sexual orientation or political perspective. Tolerance is supposed to be a widespread feature of industrially advanced democracies, as it is essential to democratic ideals and to the well-functioning of democratic political systems. Andersen and Fetner research builds on the seminal work from Uslaner, *The Moral Foundations of Trust* (2002), which identifies a linkage between tolerance of outgroups and social trust. As Uslaner (2002) put it: "tolerance of unpopular groups is a mark of the truster". Social tolerance has usually been measured by variables indicating attitudes toward members of different social groups (Persell, Green, and Gurevich 2001), of which homosexuals can be considered one.

At the aggregate level, Uslaner's (2002) cross-national research on social trust finds that income inequality within nations interferes in the expansion of generalized trust, a crucial element in the development of tolerance. This author distinguishes between particularized and generalized social trust: the first refers to the trust in people similar to one's own or with whom one is an acquaintance; while the second means trusting others in general, a diffuse feeling that "most people can be trusted". Gambetta (1988) argues that this second type of trust is built on the belief that others will act beneficially rather than maliciously towards one's own. Uslaner finds that it is the lack of generalized trust what hinders intolerance (2002, Uslaner and Brown 2005). Generalized trust promotes tolerant attitudes towards others, even those from outgroups. Income inequality he finds to be one of the main predictors of generalized trust, together with optimism, and some basic elements of society's cultural background – such as the dominant religious tradition. Uslaner presents evidence that economic inequality at the country level predicts generalized trust even better than individual-level income differences. In addition, his cross-national research also shows that income inequality between countries is a better predictor of intolerance than economic development itself (Uslaner 2002, Andersen and Fetner 2008b).

With respect to the effects of inequality at the individual level, having a lower status position or belonging to the working class has also been found to reduce tolerance of outgroups (see Andersen and Fetner 2008b and Mulligan 2010 for an extensive review). Evidences in this direction, go back to Seymour Lipset's classical thesis of the working class authoritarianism (1959) which states that members of the working class are more likely to hold anti-democratic and intolerant attitudes than people of the middle classes. In the same vein, Svallfors (2005) in a comparative analysis of four Western nations discovers that conformism/authoritarianism is more prevalent in the working class than in other classes. He finds that social class influences attitudes toward homosexuality, apart from other attitudes to civil rights and liberties, even once controlled for education. Also in this direction, Billiet et al. (1996), in their study of ethnocentrism in the Low Countries, find that working class people (and the self-employed) tend to be more authoritarian, conservative and traditionalist than individuals from other social strata, what leads them to portray lower levels of tolerance.

One of the explanations for the higher intolerance of the people with fewer economic resources comes from their more acute perception of threat. Working class people are in a more vulnerable situation than the middle class or the most affluent segments within a given society. For instance, they are more vulnerable to labor market competition from immigrant workers. This increased perception of vulnerability makes them more aware of the potential threats that minority groups may pose, therefore boosting their intolerance levels (Mulligan 2010). This mechanism can explain intolerance to immigrant minorities, but it is less clear how it can elucidate rejection of homosexuals. In this respect, it has been suggested that the mechanism connecting social class and intolerance is not a perceived threat within the labor market, but a psychological predisposition to distrust outgroups in general (Svallfors 2006, Andersen and Fetner 2008b). As Mulligan (2010) argues, working class individuals tend to distrust not a particular minority group but rather any grouping of people that are identifiable as somehow different in terms of nativity, sexual orientation, race, religion, or other lifestyle viewed as alternative. Intolerance then seems to be related to a more vague perception that an outgroup creates a social or economic threat, be it real or imaginary, to an individual's or nation's interests (Andersen and Fetner 2008b). Ignorance and parochialism can also be an explanation for the higher levels of intolerance of the working class. People at lower social positions are less likely to have travelled outside their own social context (Mulligan 2010). They are usually less exposed to diversity, in terms of lifestyles and cultures, than middle and upper classes.

Andersen and Fetner (2008b) use the concept of social tolerance when studying the effects of inequality on attitudes to homosexuality across and within nations. In their research they question Inglehart's assumption (1987) that national economic prosperity affects all citizens of a given nation in a similar manner. They apply hierarchical linear models to the study of 35 countries using the WVS data, and find that the higher the income inequality in a nation, the lower the tolerance. With respect to inequality within countries, they discover that those in the working class consistently portray less tolerant attitudes than professionals or managers. They also find that the effects of economic development are heterogeneous, when investigating the interaction of individual-level economic position and country's economic development in their effects on tolerance. One of their main conclusions is that attitudes of the working class are generally less tolerant and become less affected by economic development at the country level than

those of the middle and upper classes. They argue that economic development influences attitudes only of those who benefit most, and in this respect they contradict Inglehart's idea of the homogenous effects of economic development.

My purpose here, alongside the main objective of my dissertation, is also to expand Andersen and Fetner's research (2008b) in three different ways. First, I will update their analysis by including the fifth wave of the WVS – they used up to the fourth. Second, I will offer an explicitly dynamic explanation of changes in tolerance of homosexuality across countries. And third, not only I will revise Inglehart's assumption about the homogenous effects of economic development across social classes – as Andersen and Fetner already did, but also unambiguously question Uslaner's statement about the identical effects of income inequality across individual characteristics. This last assumption is mentioned in Andersen and Fetner (2008b) however they do not account for it in their models, therefore it remains untested. Uslaner (2002) implies that inequality may affect all members of society regardless of their own economic position. In my analysis I will test this assumption by exploring how inequality at the country level affects different groups within those nations.

Sexual Prejudice

Another generic approach from which attitudes to homosexuality have been framed is the concept of sexual prejudice expressed by Herek (2000). Sexual prejudice refers to the negative attitudes toward an individual because of her or his sexual orientation. Herek locates the study of attitudes concerning sexual orientation within the broader context of social psychology research on prejudice. Like other types of prejudice, sexual prejudice is supposed to have three principal features: 1) it is an attitude; 2) it is directed at a social group and its members; 3) and it is negative, involving hostility or dislike. He also reflects on the underlying motivations of prejudice towards homosexuality. Unpleasant interactions with gay people may cause prejudice, when they are generalized to the entire group. Prejudice also can come from fears associated with homosexuality, perhaps reflecting discomfort with one's own sexual impulses. For another group of people, sexual prejudice reflects influences of in-group norms which are hostile to homosexual or bisexual people. And finally, another cause of prejudice comes from the

perception that gay people embody a set of values which are in conflict with one's own. These motivations actually derive from the psychological functions that sexual prejudice is supposed to fulfill. For some people it may serve for the reduction of anxiety linked to fears towards one's own sexuality and gender, while for others it may reinforce a positive sense of being member of a given social group. This is the case when masculine identity is constructed in denial of homosexuality, or when a social group or religious community uses hostility to homosexuality as a criterion for being a good member.

The study of the reasons behind heterosexuals' negative attitudes toward homosexuals began to receive scientific attention during the second half of the XXth century, after homosexuality ceased to be considered a mental illness by professional medical associations. Herek (2000) assesses the most relevant contributions to the study of sexual prejudice, homophobia and heterosexism in the US, and enumerates its main predictor factors, which I discuss below when commenting on the general determinants of attitudes to homosexuality. With respect to the prevalence of antigay attitudes, Herek extensively reviews the American literature on the issue, and concludes that while still most adults hold negative positions, the polls show that attitudes are becoming increasingly tolerant in many areas (see also Yang 1997).

Conservative Attitudes

Attitudes to homosexuality can also be included within the broader frame of traditional morality (Brewer 2003) or socially conservative attitudes (see Andersen and Fetner 2008a). In this vein, negative attitudes towards gay people have been shown to be highly related to other illiberal and intolerant attitudes (as acknowledged by Andersen and Fetner 2008a, Herek 2000, and Svallfors 2005). Moreover, in the US, antigay attitudes are considered central to conservative political and religious ideologies since the 1980s (see Herek 2000). Andersen and Fetner (2008a) reflect upon the considerable research on the social basis of conservative attitudes of which intolerance of homosexuality can be considered part of. Attitudes to homosexuality therefore are explained by similar determinants than those explaining social attitudes in general (see

Aguero, Bloch and Byrne 1984, Ellison and Musick 1993, Herek 1984, Kite 1984, Kite and Whitley 1996, Lottes and Kuriloff 1994).

Determinants of Attitudes to Homosexuality

Tolerance of homosexuality has been conceptualized from different points of view: as a component of the theory of modernization, as part of the notion of social tolerance, as a sexual prejudice, and as one among other conservative attitudes. Taking all these approaches into consideration, here I offer a summary of the main determinants of attitudes to homosexuality, to include them as controls in my posterior analysis. At the individual level, education has consistently been proved to affect attitudes to homosexuality (Stouffer 1955, Davis 1975, McCutcheon 1985, Herek 2000). University education exposes people to a variety of ideas and life-styles, which could encourage them to become more open-minded and liberal (Andersen and Fetner 2008a, Lottes and Kuriloff 1994). As commented earlier in a more extensive manner, social class has as well been tested to have an impact on tolerance (see Lipset 1959, Svallfors 2005, or Andersen and Fetner 2008a&b), so that people who are in lower social positions tend to be less tolerant. Inglehart himself talked about the conservatism of the working class in the field of moral values (Inglehart and Appel 1989). When people detach from traditional moral norms, it produces tensions in their conscience and generates anxiety. Low status people are more likely to suffer from it than higher status people, as they are more exposed to existential anxiety.

The rural/urban cleavage is also relevant, being those living in cities more tolerant than those from rural areas (Stouffer 1955, Wilson 1985, Herek and Capitanio 1996, Andersen and Fetner 2008a&b). In general, cities provide a particularly appropriate environment for the expression and circulation of diverse interests and lifestyles, and for the congregation of people who pursue them and could mutually reinforce each other. Wilson (1985) shows how urbanism, operationalized as respondent's community size, is associated with greater tolerance and willingness to extend the civil liberties of homosexuals, alongside other unpopular or deviant groups. This effect can be explained using Merton's (1957) classical distinction between "localite" and "cosmopolitan" individuals. Localites live in smaller communities and stay in contact mainly with

people similar to themselves, while cosmopolitans live in larger municipalities and have a more varied set of influences and interests. Therefore, localites tend to be more suspicious of outgroups, like homosexuals, than cosmopolitans. There is a debate over if city size is a situational or socialization variable. Do urban people tolerate deviance because they live in big cities, or did they learn tolerance by growing up in big cities? Stephan and McMullin (1982) argue that it is the size of the community in which one lived as a teenager that matters most. In their research they find that intolerance is strongly associated to the size of the city in which the respondent lived at the time the survey was taken. However, it is much more strongly related to the size of the city in which the respondent lived when he was sixteen.

Religiosity is consistently considered a determinant of intolerance to homosexuality, as well as of conservative attitudes in general (Agnew et al. 1993, Schwartz and Huismans 1995, Andersen and Fetner 2008a). In the US, Herek (2000) indicates that heterosexuals who identify with fundamentalist denominations and regularly attend religious services manifest higher levels of sexual prejudice than nonreligious and members of liberal denominations. Andersen and Fetner analysis (2008a) confirms the effects of religiosity on tolerance with more recent data for the US and Canada, and in a posterior multilevel research of 35 countries (2008b) they generalize the argument to a wider range of nations. In the same vein and using a similar comparative multilevel framework, Henshaw (2010) finds that religiosity has a significant negative impact on levels of acceptance of homosexuality. Nevertheless, the relationship between religion and tolerance of homosexuality could be more complex than expected. For instance, Ford et al. (2009) find that, when controlling for the effects of right-wing authoritarianism, endorsement of the Christian beliefs and creed is related to positive attitudes toward homosexuals as individuals or group – not to homosexuality as a lifestyle. Moreover, in recent decades some churches have liberalized, although many still adhere to proscriptions against homosexuality.

There is also a well documented gender effect on tolerance, being women more tolerant than men. Herek (2000) argues that sex differences in sexual prejudice can be observed both in the area of personal acceptance and in attitudes towards civil rights and social policy (see also Britton 1990, Yang 1997). Life course transitions are also considered to have an effect on tolerance. Getting married and having children are events associated

with traditional lifestyles that can foster more traditional or conservative attitudes (Andersen and Fetner 2008a, Dejowski 1992, Trent and Scott 1992, Smith 1992). Herek (2000) indicates that sexual prejudice is also linked to several psychological and political variables. Heterosexuals with high levels of sexual prejudice tend to be more authoritarian than the average (see Altemeyer 1996, and Haddock and Zanna 1998). They are usually more rightist in ideological terms, and have conservative party preferences. Sexual prejudice is as well strongly related to interpersonal contact with gay people, so that the higher the contact the lower the prejudice. Permissive attitudes to homosexuality tend to be linked with postmaterialist values (Inglehart and Appel 1989). This is because postmaterialist values are closely related to a decline in traditional values in general, involving more tolerant attitudes toward issues such as abortion, divorce, extramarital affairs, prostitution or euthanasia (Inglehart and Appel 1989). Conversely, materialists tend to subscribe traditional norms that support the upbringing of children within the traditional paradigm of survival: the heterosexual biparental family reinforced by norms which stigmatize any other form of sexual activity.

The effect of age is also widely acknowledged in the literature (see Inglehart 1977, 1990, Inglehart and Appel 1989, Herek 2000, Anderson and Fetner 2008a&b among others). The young tend to be more tolerant to homosexuality than the old. The problem then is the identification of age, period and cohort effects in the data. To Inglehart, the effect of age is attributable mainly to generation effects (Inglehart and Welzel 2005). Each successive generation, socialized under an increasingly prosperous environment, portrays more tolerant values than the previous one. Consequently, cohort replacement is progressively bringing a more tolerant society. In contrast to the generational interpretation, the idea that aging and social and political conservatism go hand in hand has traditionally received quite a large echo in the literature (Stouffer 1955, Berelson and Steiner 1964, Glenn 1980, Sears 1981). For instance, Glenn (1974) assumes that ageing at the later stages of the life course is associated to increasing conservatism, in the form of opposition to change in general, and to a change that can benefit the disadvantaged segments of society in particular. Older people also tend to appraise social order, authority and obedience more than the young, and to adopt a generally restrictive rather than permissive and tolerant attitude toward human behavior. However, the linkage between growing old and conservatism is under criticism from different points of view (Cutler and Kaufman 1975, Danigelis and Cutler 1989, among

others). In this respect, Danigelis and Cutler (1989) examine changes in social and political attitudes during a period of increasing liberalism in public opinion in the US. They find that attitude change takes place in all cohorts in the same direction, contradicting the aging-conservatism thesis.

Danigelis and Cutler (1991) plead for a combination of generation and period effects to explain the evolution of conservative attitudes. In this same vein, Anderson and Fetner (2008a) find support for the coexistence of cohort and period effects in tolerance of homosexuality. They argue that although generational differences have remained quite constant over time, in tune with Inglehart's modernization theory, this does not mean that each cohort has remained stable in levels. In fact, for the US and Canada cases, they show how all cohorts have experienced a similar change over time in the direction of increasingly accepting homosexuality. Period effects of that sort are contradictory to what conventional theories of value and attitude change predict. Andersen and Fetner (2008a) mention the agreement in the literature that attitudes regarding controversial social issues are supposed to be relatively age-stable, and that major overall changes shall come from cohort replacement (see Cutler and Kaufman 1975, Firebaugh and Davis 1988, Alwin and Krosnick 1991, Davis 1992, Wilson 1994, Quillan 1996). This is a similar point of view to that of Inglehart with respect to values. Although Andersen and Fetner (2008a) explicitly question the age-stability hypothesis, their conceptualization of period effects seems to be the conventional one. Period effects are seen as country idiosyncratic and seemingly unconnected from generation effects and the underlying process of modernization. They mention that many cultural changes since 1981 (in the US and Canada) may be responsible for the rapid changes in public opinion in the US and Canada. Quoting Walters (2001), they refer to the tragedy of the AIDS epidemic, which brought gay men's lives into the public sphere, and the greater inclusion of gay and lesbian characters in films and television. As well, they refer to general changes in policies and legislations in different countries that could have exerted a similar influence. In opposition to their view, my argument is that period effects are not only capturing these idiosyncratic societal changes, but the ongoing general modernization process as well. And in this respect, period effects can portray the same pattern as generation effects.

In my research, period effects are not only understood as random shocks, like in the conventional view (see Inglehart 1997, among many others). Inglehart's classical approach to the dynamics of values does not explain the large amount of change experienced in tolerance of homosexuality across a wide range of nations. I argue that period effects can have a trend; the same kind of tendency that lies beneath generation effects. I explicitly propose that modernization can take place at "real-time", by means of self-actualization of values and abstract or symbolic predisposition, and not only through the delayed process of cohort replacement. I do not exclude the possibility of periodic random shocks or contextual influences contradictory to the progressive modernization process. They can actually coexist with the same trend that is causing constant and monotonic period and generation effects.

Andersen and Fetner conceptualization of period effects (2008a) is not taking into account Inglehart's modernization theory. Are gay people appearing on TV shows or solidarity with the HIV epidemics the cause or the consequence of the increasing acceptance of homosexuality? To Andersen and Fetner (2008a) it seems to be one of the causes, probably because they only focus on two specific country cases. However, every nation in the world has experienced the AIDS epidemics, but not all countries have changed attitudes towards homosexuality; only affluent societies have done it. From my point of view, it is the underlying process of modernization what favors tolerant attitudes to homosexuality, which sooner or later lead to "visible" cultural or legislative changes, and not the other way around. System level changes, such as those mentioned by Andersen and Fetner (2008a), can eventually facilitate or accelerate the process, helping to normalize situations and change the mind of the more recalcitrant. However, the overall process of modernization is quite likely to be the main underlying cause of all changes. In this respect, I tend to support the human development sequence idea that observable cultural changes such as gay visibility and supportive gay legislations are the ultimate consequence of the overall process of modernization (Inglehart and Welzel 2005). Socioeconomic development quietly transforms the values and predispositions of the population, such that, at the end, pressures are exerted at the societal level to change in response. In the analysis I perform here, I offer abundant evidence in this direction.

Research on tolerance of homosexuality has predominantly focused on single country studies, mainly the United States, and in exploring individual-level variation, or

aggregate changes over time within a particular nation. Country-aggregate comparative analysis or explicitly multilevel explanations are still scarce, with no more than few exceptions (among them Inglehart and Appel 1989, Andersen and Fetner 2008b, Henshaw 2010 or Gerhards 2010). The risk of considering only the variation across individuals or over time in a single nation is to turn aside the attention from the larger social and political forces that may be at stake. Moreover, the US case, from which most research on tolerance of homosexuality is based on, is usually considered an atypical case. As Andersen and Fetner (2008b) acknowledge, the United States is restricting lesbian and gay rights at a time when many other countries are recognizing same-sex partnerships and allowing marriage rights to gay men and lesbians. This is why in my research design, besides explaining individual level differences, I unambiguously account for cross-country variance and over time changes in attitudes to homosexuality. This analysis is therefore a valuable contribution in itself, beyond its main purpose within the frame of this dissertation of testing the individual capacity for change beyond the formative years. I will contradict the age-stability assumption in tolerance of homosexuality by presenting overwhelming survey evidence from many different countries in the direction of a modernization in "real-time": a generalized and large trend in period effects. I will expand the study of Anderson and Fetner (2008a) restricted to the US and Canada to a wide range of countries experiencing modernization, and will explicitly connect it to Inglehart's individual modernity theory. I will argue that modernization can take place at "real-time" and not just by means of generational replacement. The life course explanation will be taken into account only partially as not many direct indicators are available in the data.

With respect to the contextual characteristics that may influence tolerance of homosexuality, as in the former section about religious values, I take into account two analytical components: the static and the dynamic ones. At the static stage, the level of societal modernization has been considered to explain cross-country differences in levels of tolerance (see Inglehart and Appel 1989, Inglehart and Welzel 2005, or Andersen and Fetner 2008b). There are a number of indicators that can be used to capture the degree of modernization of a country. If we focus on the level of economic prosperity, we can use the GDP per capita (see Andersen and Fetner 2008b). If we want to grasp a more comprehensive measurement of development, we may use the

composite HDI, which combines de GNI per capita, together with an education index and life expectancy at birth (see Gerhards 2010). If we are comparing nations which are already among the richest of the world, more important than nominal wealth *per se* would probably be the equity with which this wealth is distributed upon society. Therefore we could take into account the level of income inequality, as measured by the Gini coefficient (see Andersen and Fetner 2008b). Apart from direct measures of material modernization, we could also consider the effect of values at the aggregate level, for instance, the contextual level of postmaterialism of a given nation by using the Percentage Difference Index (Abramson and Inglehart 1992).

The cultural background of a country is also thought to affect aggregate attitudes to homosexuality. In fact, Inglehart and Baker (2000) argue that factors such as cultural heritage, religion, and Communist rule encourage the maintenance of traditional values in some modern economic settings. With respect to the effect of religion, Inglehart and Welzel's (2005) explicitly say: "The fact that a society was historically shaped by a Protestant or Confucian or Islamic heritage leaves and enduring impact, setting that society on a trajectory that continues to influence subsequent development – even if the direct influence of religious institutions is modest today". In my analysis, I consider a broad measure of cultural background: the hegemonic religious denomination of each country, following the classification of Norris and Inglehart (2004).

At the dynamic contextual level, I hypothesize that change in the main modernization indicators would modify tolerance of homosexuality in real-time. This statement is central to the main argument defended in this dissertation. Apart from including period effects as measured by the wave of the survey, I consider the evolution in the human development index (change in HDI), and the evolution of income inequality (change in the Gini coefficient) as the changing contextual characteristics that most likely may affect tolerance. In fact, given that the group of countries I am exploring is already affluent, I believe that the evolution of income inequality would be better in explaining changes in tolerance of homosexuality than development *per se*. Besides that, contextual income inequality has also been shown to affect tolerance through its impact on social trust (Uslaner 2002). Here I will further contribute by modeling its dynamic effects.

Dependent Variable

Taking all these arguments into consideration, I am going to explore the evolution of tolerance of homosexuality over a period of more than twenty years and across 28 OECD countries. Most of these countries have experienced economic growth and societal modernization over the period of observations. As in the case of religious values, I use the microdata of the WVS containing five waves, going from 1981 to 2007. My main purpose is to identify the role intra-cohort learning plays in the changes experienced over time, in comparison to inter-cohort differences and cohort replacement effects. My dependent variable is measured by a questionnaire item that asks respondents to give their opinions on various social issues, one of which is homosexuality. The exact wording of the question is as follows:

Please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between, using this card.

Homosexuality									
Never justifiable									Always justifiable
1	2	3	4	5	6	7	8	9	10

Attitudes to homosexuality can be measured using a variety of indicators from which the one employed here is just a possibility. Some of the potential limitations of this item are pointed by Andersen and Fetner (2008a). It can be potentially exposed to context effects given that the item is positioned among a list of morally questionable and illegal actions. Moreover, the item does not distinguish between male and female homosexuality, despite the fact that it has been proven that tolerance towards lesbians tends to be higher (see Herek 1984). Persell et al. (2001) also mention the possible existence of a social desirability bias affecting the more educated respondents. This type of respondents may feel social pressure to express more tolerant attitudes toward persons of different races or sexual orientations, regardless of what they really think. Schuman and Presser (1977) even suggested that this response bias may inflate the actual positive effects of education on tolerance. The measurement of social tolerance could also be problematic since a general commitment to the idea of tolerance and respect for the others may differ from real-world reactions towards actual others (see

Case et al. 1989). With all the limitations, this survey item is one of the most popular and usually employed in the empirical research in this field (see Persell et al. 2001, Loftus 2001, Andersen and Fetner 2008a&b, Henshaw 2010, Gerhards 2010).

Research Questions

I want to know to what extent have attitudes toward homosexuality changed over time across the cluster of industrially advanced democracies I have selected. Moreover, I want to know if the change has been homogeneous across countries. Is the increase in tolerance observed by Andersen and Fetner (2008a) for the cases of the US and Canada generalizable to the rest of affluent nations? Furthermore, and central to the main hypothesis of this dissertation, is the contribution made by period effects to that evolution still statistically significant once controlled by generation, cohort replacement and age effects? With respect to generation effects, I also want to know if older birth cohorts are consistently less accepting of homosexuality than younger cohorts across all countries. Has the gap between young and old changed over time? Regarding age effects and the impact of life course events: are people becoming less tolerant as they age or enter the process of family formation?

The main purpose of my analysis is to disentangle the age, period, and cohort components in the data to verify my hypothesis of intra-cohort learning. However, I also test the effects of a set of additional predictors of tolerance at the individual, country and overtime levels, both as a way of deepening into the understanding of my dependent variable, and to apply further controls for the main effects of the model. Using the same scheme as in the analysis of religious values, first I perform a country-by-country analysis, and then I move onto the multilevel explanation. In the hierarchical linear models at the static country-level stage, I include the country's level of development (HDI), income inequality (Gini coefficient), dominant religious denomination and level of postmaterialis (PDI). One of my main purposes is to test whether socioeconomic development retains its explanatory capacity once it is controlled by country's income inequality. Given that the cluster of countries I study is already among the wealthiest in the world, I hypothesize that income inequality will be a better predictor of differences in tolerance than societal development *per se*. Another important question I want to

respond is whether the cultural background of countries embodied by its dominant religious adscription still plays a relevant role once it is controlled by societal modernization factors. My guess is that the more advanced the process of modernization is – and the countries I am exploring are already quite advanced, the less influence will the cultural background have. At the dynamic country level, my purpose is to be able to test whether the increase or decrease in tolerance is connected in real-time to the shifts in its exogenous time-varying covariates: change in human development levels and the change in income inequality. Is the increase in country's development over time speeding up the acceptance of homosexuality? Does the increase in income inequality over the period of observations reduce tolerance of homosexuality? These types of questions have not been answered in the empirical research so far.

Another aim of the analysis is to discard spurious relations due to third variables affecting period or generation effects, especially composition effects of generations. Changes in attitudes could have been the consequence of demographic transformations, and not of true attitude change. It could well be that once generation and period effects are controlled by sociodemographic determinants, their impact disappears. Then it is important to introduce these social indicators as control variables for a spuricity test of the main effects in the model. However, already an existing part of the empirical research indicates that changes in public opinion on homosexuality over the past few decades have been so widespread, that cannot be explained by changes in demographic composition (Adam 1998, Loftus 2001). In any case, at the individual level I introduce the set of usual determinants of attitudes to homosexuality discussed in the theoretical part of this section. I control for gender, marital status, education, social class, religious denomination and practice, community size and postmaterialist values. Marital status also serves as an indicator of life course events. In these models church attendance is entered in its original ordinal metric. Social class is constructed by using occupation indicators, following Andersen and Fetner (2008b). Individuals are classified in four different groups: working class, routine non-manual workers, professionals and managers. It is of special interest to explore the cross-level interaction of social class with economic prosperity at the contextual level, to validate Andersen and Fetner (2008b) main finding about the difficulty to change working class intolerant attitudes even in an environment of increasing economic prosperity. I will also add to the debate by exploring on the heterogeneous effects of education, gender, and postmaterialism

conditional on country's income inequality levels. I argue that inequality at the country level is also able to modify the effects of these explanatory factors at the individual level.

Over Time Cross-Country Analysis

Tolerance of homosexuality has experienced an extraordinary change over the period of observations. Figure 5.1 portrays the evolution of tolerance considering all countries in the sample together. Across these 28 OECD nations, tolerance levels have raised from an overall rejection of 3.09 (in a 10 points scale) at the beginning of the eighties to a situation of generalized acceptance by the end of the first decade of the new century: 5.44. It is quite uncommon to spot such a huge societal transformation in attitudes over a relatively short period of time, even within the field of study of social change.

Figure 5.1 Evolution of Tolerance of Homosexuality in 28 OECD Countries, 1981-2007.

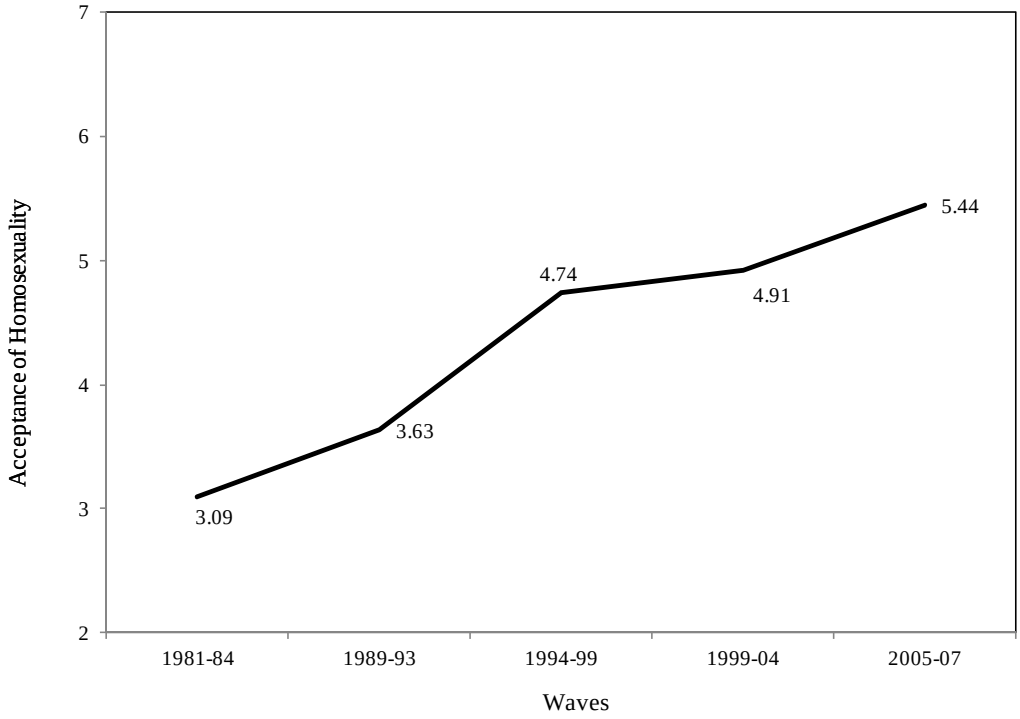


Table 5.1 presents more detailed information, showing the average scores of tolerance of homosexuality across each of the countries, together with the increase in levels (the

difference from the start to the end point of the series), and the slope and intercepts of the trend[39].

Table 5.1 Average Scores of Tolerance to Homosexuality in 28 OECD Countries, 1981-07.

	1981-84	1989-93	1994-99	1999-04	2005-07	Diff.		Slope	Intercept
Norway	3.59	4.14	5.71	-	7.75	4.16	*	1.40	1.79
Sweden	4.43	4.53	7.03	7.65	8.43	4.00	*	1.11	3.08
Iceland	3.33	5.45	-	7.19	-	3.86	*	1.93	1.46
Spain	2.82	3.79	5.46	5.85	6.66	3.84	*	0.97	1.99
France	3.17	3.92	-	5.27	6.46	3.30	*	1.12	1.90
Switzerland	-	4.23	6.45	-	7.34	3.11	*	1.55	2.90
Canada	3.06	4.07	-	5.44	5.70	2.63	*	0.93	2.25
Finland	3.45	4.40	4.52	4.94	5.94	2.50	*	0.55	2.99
Belgium	3.02	3.88	-	5.40	-	2.37	*	1.19	1.73
Great Britain	3.41	3.53	5.24	4.89	5.69	2.29	*	0.59	2.78
Mexico	2.25	2.89	2.89	3.58	4.53	2.28	*	0.53	1.65
Japan	2.52	2.45	3.68	4.36	4.77	2.26	*	0.64	1.63
USA	2.37	3.07	3.75	4.75	4.57	2.20	*	0.61	1.88
Germany	-	4.31	6.88	5.69	6.47	2.15	*	0.53	4.52
Austria	-	3.33	-	5.36	-	2.03	*	2.03	1.30
Australia	3.79	-	4.60	-	5.64	1.85	*	0.92	2.83
Slovakia	-	3.26	5.26	4.91	-	1.65	*	0.82	2.83
Netherlands	5.60	7.20	-	7.82	7.18	1.58	*	0.54	5.61
Ireland	2.72	3.15	-	4.27	-	1.55	*	0.77	1.83
Denmark	5.17	4.69	-	6.59	-	1.42	*	0.71	4.06
Poland	-	1.83	2.76	2.90	3.07	1.24	*	0.39	1.68
Czech Republic	-	4.35	6.86	5.47	-	1.12	*	0.56	4.44
Portugal	-	2.34	-	3.19	-	0.85	*	0.85	1.50
Italy	2.52	3.63	-	4.83	3.34	0.83	*	0.37	2.66
New Zealand	-	-	4.74	-	5.43	0.69	*	0.69	4.05
South Korea	2.16	1.56	2.13	2.77	2.81	0.65	*	0.25	1.53
Turkey	-	1.58	-	1.55	1.74	0.16	†	0.08	1.46
Hungary	1.43	2.71	3.52	1.45	-	0.02		0.09	2.06
Average	3.20	3.63	4.79	4.84	5.45	2.02			
SD	1.03	1.23	1.52	1.67	1.79				
Correlations									
Slope - Intercept		-0.22							

Significance: * p<0.05; two-tailed T-test for the comparison of averages.
† p<0.05; one-tailed T-test.
Source: World Values Surveys, pooled 1981-2007.

[39] The cross-country period averages offered in table 5.1 are different to those presented in figure 5.1, as the former are calculated considering that each country has the same weight.

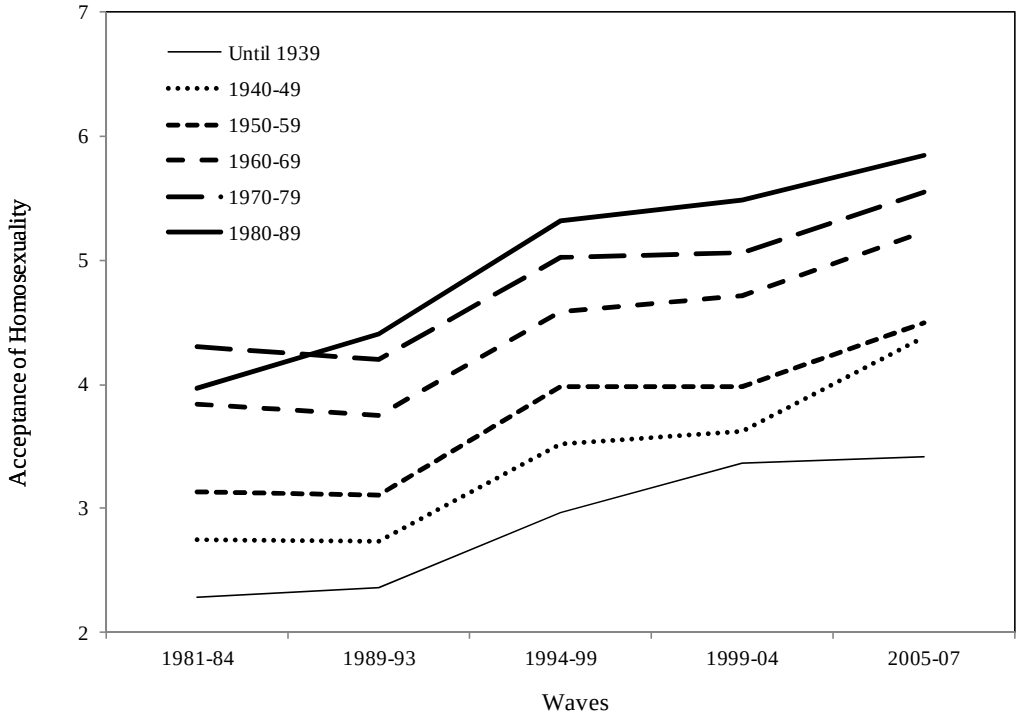
At the beginning of the time series, the population of almost all nations was intolerant to homosexuality. The only countries that even for that time being still ranked relatively high in tolerance were The Netherlands (5.6), Denmark (5.17) and the rest of Scandinavian countries. Most nations did not even reach an average of three in the scale. However, at the end of the period of observations, the levels of acceptance looked completely different. Almost all countries presented tolerance levels above the theoretical midpoint of the scale (5.5).

The average increase over time across countries is 2.02, which basically implies a transition from a generalized rejection of homosexuality to a widespread acceptance. In some countries this increase in acceptance has meant an extreme improvement of around 4 points with respect to the 10 points scale, like in Norway (a 4.16 increase), Sweden (4), Iceland (3.86), or Spain (3.84). In other cases the increase has not been as spectacular as that one; however it is still impressive in comparison with the relative stability of other social and political attitudes. Moreover, the direction of the transformation has been homogeneous across countries: all of them have improved their levels of tolerance over time. In all cases, except from Hungary, this improvement in levels has been statistically significant. The negative correlation of -.22 between the intercept and the slope of the time trend for each country indicates a slight tendency by which countries with lower levels of acceptance at the beginning are those in which tolerance has increased the most at the end. In the ample majority of countries the increase has been linear, probably following the trend of the modernization process. However, there are some exceptions, like Italy or Hungary, with a curvilinear evolution, or what could be called an “intolerance revival”, also observed for the case of religious values.

Figure 5.2 portrays the evolution of each generational group over the period of observations, considering the population of the whole set of 28 OECD countries together. As can be seen, all generations have experienced the same massive change over time. Each and every cohort follows the same upward trend, which implies becoming one point more tolerant with the passage of time. Therefore, the hints obtained at this descriptive stage indicate that this one seems to be a good case to explore intra-cohort change and learning. In tune with Inglehart’s theory, figure 5.2 also shows strong, stable and monotonically progressive generation effects. Each new cohort

is almost half point more tolerant to homosexuality than the preceding one. The distance that separates the younger and the older cohort is of around two points.

Figure 5.2 Evolution of Tolerance of Homosexuality across Generational Groups in 28 OECD Countries, 1981-2007.



Figures 5.3 and 5.4 explore the evolution of tolerance of homosexuality over time and across generations in each country. Apart from the clear generational differences in the majority of these OECD nations, acceptance of homosexuality has clearly increased within each cohort over time. Moreover, in some of these countries, like Sweden, Norway or Spain, the amount of within cohort change seems to be even larger than that produced between cohorts. Exceptions to this almost homogeneous upward trend are Turkey, Poland and Hungary. The general level of development and modernization in these nations is not as high as in other OECD countries. Besides that, ex-communist countries have experienced a conservative revival, which can also be spotted in the case of the Czech Republic though it departed from higher levels of acceptance. Italy has also suffered a decrease in tolerance across generations in the last wave of the survey, breaking the upward trend it portrayed since the eighties.

Figure 5.3 Mean Values for Tolerance of Homosexuality across Cohorts, by Wave and Country

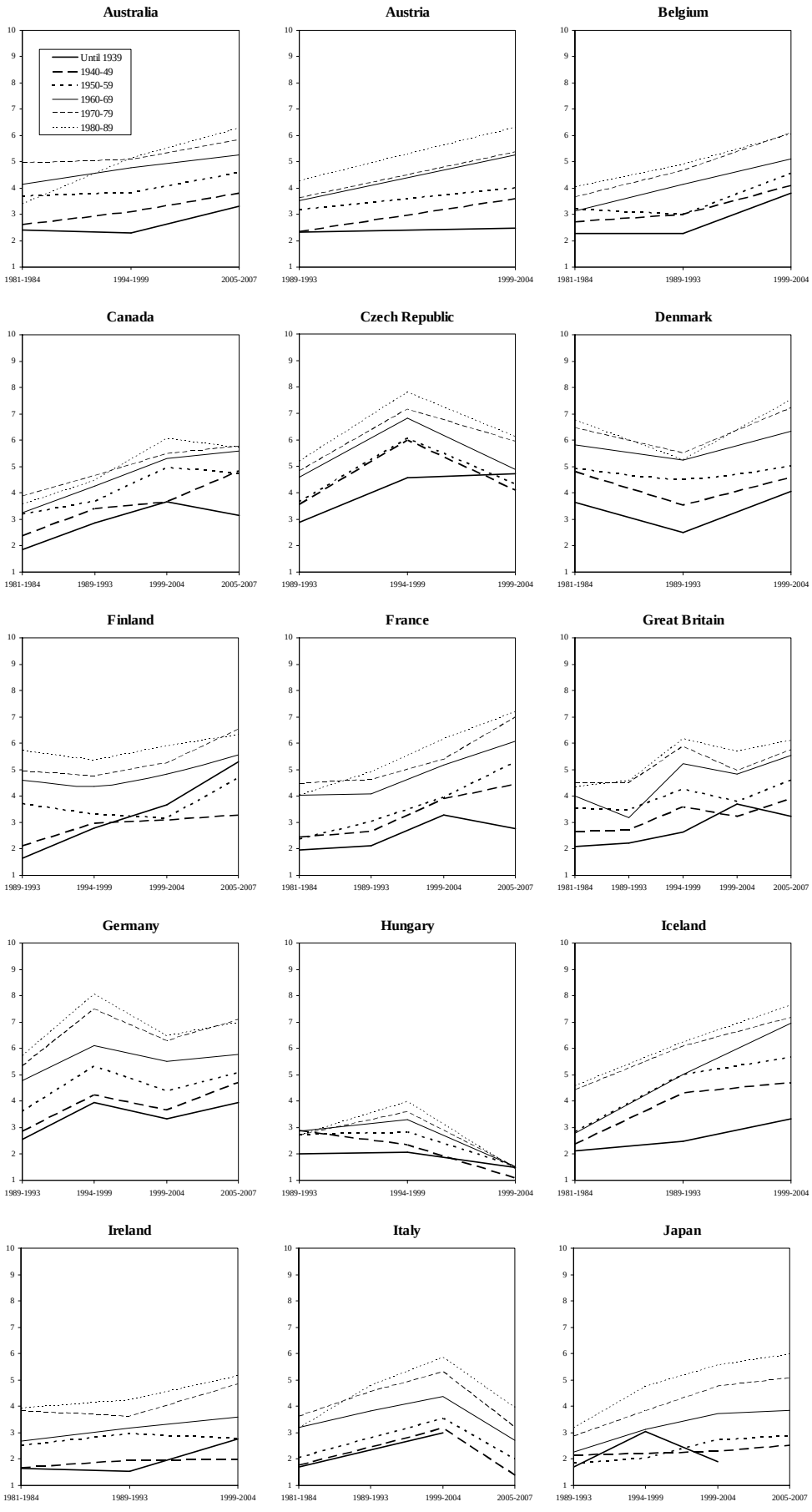
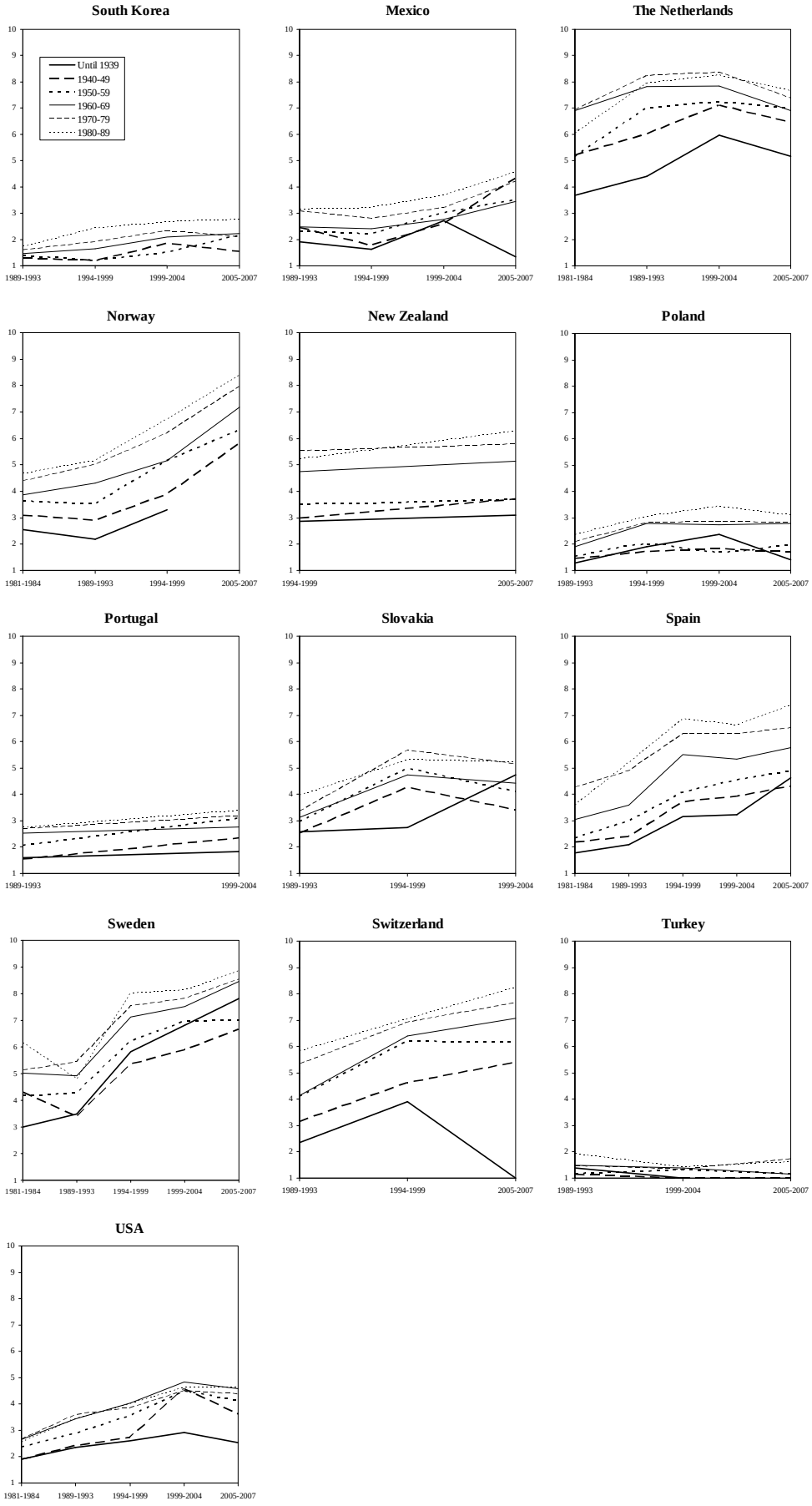


Figure 5.4 Mean Values for Tolerance of Homosexuality across Cohorts, by Wave and Country



So far, the descriptive exploration of the dynamics of tolerance of homosexuality points to the presence of strong and clear intra-cohort learning processes. However, the proper statistical controls need to be applied before making such a statement. Previous to the explanatory phase and the regression analysis, I study the distribution of the dependent variable. Figures A3 and A4 in the appendix present the distribution of responses to tolerance of homosexuality in the 10 points scale for each of the 28 OECD countries. The pattern of response does not follow a normal distribution but a Gamma one, as Anderson and Fetner (2008a) already realized in their previous analysis of the US and Canada cases. In such situations, it is advisable to avoid ordinary least squares which assume the conditional distribution of the dependent variable to be normal. The reason is that it usually gives upwardly biased estimates when predicting a dependent variable with a Gamma distribution (Andersen and Fetner 2008a).

Tables 5.2 and 5.3 are a preliminary attempt to separate generation and period effects in the data. Taking into account the distribution of the dependent variable, I define a set of Gamma regression models, a type of generalized linear model, for each country containing only cohorts and waves as predictors. By excluding age from the equation, I follow the assumption that its effects are negligible. Both generations and survey waves are dichotomized in order to capture potential non-linear effects. Results confirm the descriptive analysis performed before: both generation and period effects are important in explaining the variance in tolerance of homosexuality within every country. Generation effects are statistically significant and follow the same pattern in all cases: each new generation is more tolerant than the previous one. Period effects are as well statistically significant in each case, and portray almost the same structure across all countries: the passage of time invariably leads to increasing levels of acceptance.

Moreover, for the vast majority of OECD countries generation and period effects seem to be both equally responsible for the increasing acceptance of homosexuality. The deviance and associated measures of fit indicate that the Gamma models provide a better fit to the data than those coming from OLS or logit regression (not shown for the sake of simplicity). Tables 5.4 and 5.5 present the elasticities or marginal effects for each variable. In the majority of countries, the magnitude of period and generation effects is quite balanced, being in some cases period effects more influential than generation effects like in Finland, Norway, Sweden, Spain, Japan or Mexico.

Table 5.6 shows the improvements in the R-squared when period effects are introduced in the model. In some OECD countries these improvements are even larger than the explanatory capacity of generations alone, as in the cases of Mexico (a 90.4% improvement in the R^2), Japan (71.3%), or Finland (68.5%). However, these nations do not portray especially relevant generation effects as well, therefore the relative contribution of period effects could be overstated. In other countries such as Sweden (53.4%), the USA (51.7%), Iceland (44.9%) or Canada (41.3%), strong generation effects coexist with almost equally large periodic effects. In the majority of the remaining nations the contribution of period effects is still highly relevant.

Table 5.2 Coefficients for Gamma Models Predicting Tolerance of Homosexuality, by Country.

		AUL	AUR	BEL	CAN	CZR	DEN	FIN	FRA	GB	GER	HUN	ICE	IRE	ITA
Constant		1.541*** (0.030)	1.478*** (0.032)	1.412*** (0.033)	1.295*** (0.027)	1.651*** (0.021)	1.915*** (0.038)	1.237*** (0.024)	1.473*** (0.031)	1.540*** (0.030)	1.726*** (0.016)	0.356*** (0.028)	1.441*** (0.035)	1.396*** (0.045)	1.326*** (0.034)
Generation	Until 1939	-0.717*** (0.045)	-0.672*** (0.059)	-0.631*** (0.039)	-0.578*** (0.035)	-0.549*** (0.046)	-0.655*** (0.046)	-0.679*** (0.080)	-0.789*** (0.042)	-0.723*** (0.034)	-0.765*** (0.028)	-0.282*** (0.090)	-0.769*** (0.062)	-0.884*** (0.054)	-0.767*** (0.045)
	1940-49	-0.531*** (0.040)	-0.598*** (0.047)	-0.436*** (0.035)	-0.354*** (0.032)	-0.376*** (0.031)	-0.394*** (0.048)	-0.681*** (0.047)	-0.534*** (0.036)	-0.541*** (0.033)	-0.625*** (0.024)	-0.212*** (0.072)	-0.514*** (0.053)	-0.867*** (0.057)	-0.697*** (0.038)
	1950-59	-0.287*** (0.035)	-0.386*** (0.046)	-0.364*** (0.034)	-0.199*** (0.029)	-0.342*** (0.029)	-0.285*** (0.046)	-0.480*** (0.042)	-0.466*** (0.033)	-0.324*** (0.032)	-0.412*** (0.020)	-0.094 (0.068)	-0.350*** (0.048)	-0.467*** (0.054)	-0.565*** (0.033)
	1960-69	-0.125*** (0.031)	-0.210*** (0.044)	-0.175*** (0.033)	-0.100*** (0.026)	-0.166*** (0.027)	-0.115*** (0.041)	-0.187*** (0.036)	-0.150*** (0.032)	-0.216*** (0.030)	-0.206*** (0.020)	-0.054 (0.064)	-0.278*** (0.040)	-0.367*** (0.050)	-0.261*** (0.033)
	1970-79	-0.011 (0.030)	-0.184*** (0.042)	-0.038 (0.031)	-0.021 (0.024)	-0.076*** (0.027)	-0.020 (0.040)	-0.088** (0.035)	-0.047 (0.031)	-0.058** (0.029)	-0.055*** (0.019)	-0.065 (0.061)	-0.036 (0.038)	-0.095** (0.047)	-0.089*** (0.033)
	1980-89	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
Period	Wave 1 (1981-84)	(ref.)	-	(ref.)	(ref.)	-	(ref.)	(ref.)	(ref.)	(ref.)	-	(ref.)	(ref.)	(ref.)	(ref.)
	Wave 2 (1989-93)	-	(ref.)	0.136*** (0.029)	0.251*** (0.026)	(ref.)	-0.212*** (0.031)	0.427*** (0.045)	0.096*** (0.031)	-0.0269 (0.028)	(ref.)	0.742*** (0.059)	0.424*** (0.035)	0.070* (0.037)	0.263*** (0.030)
	Wave 3 (1994-99)	0.109*** (0.027)	-	-	-	0.436*** (0.025)	-	0.445*** (0.037)	-	0.277*** (0.031)	0.345*** (0.018)	0.954*** (0.057)	-	-	-
	Wave 4 (1999-04)	-	0.382*** (0.029)	0.426*** (0.031)	0.480*** (0.027)	0.180*** (0.021)	0.074** (0.033)	0.535*** (0.037)	0.352*** (0.029)	0.226*** (0.031)	0.184*** (0.018)	0.085 (0.054)	0.646*** (0.034)	0.263*** (0.039)	0.457*** (0.032)
	Wave 5 (2005-07)	0.294*** (0.029)	-	-	0.515*** (0.026)	-	-	0.682*** (0.036)	0.521*** (0.032)	0.310*** (0.033)	0.270*** (0.018)	-	-	-	0.009 (0.038)
	Log likelihood	-11,399.8	-6,954.0	-13,174.4	-16,905.4	-15,319.6	-8,325.1	-11,191.5	-11,471.3	-13,415.3	-24,056.7	-6,371.4	-6,395.4	-6,374.1	-13,658.5
	Deviance	2,753.7	1,887.5	3,615.9	4,100.3	3,804.2	2,130.0	2,965.4	2,560.5	3,095.1	4,447.4	2,272.8	1,296.6	1,889.9	4,037.2
	(1/df) Pearson	0.479	0.573	0.568	0.473	0.048	0.487	0.547	0.469	0.480	0.369	1.072	0.448	0.665	0.669
	Observations	N=4,530	N=2,873	N=5,490	N=6,708	N=5,869	N=3,124	N=4,465	N=4,611	N=5,494	N=8,957	N=3,844	N=2,462	N=2,979	N=6,063

Dependent variable: Tolerance of homosexuality (range 1 ‘never justifiable’ to 10 ‘always justifiable’).
Significance: ***p<0.01; **p<0.05; *p<0.10.

Table 5.3. Coefficients for Gamma Models Predicting Tolerance of Homosexuality, by Country.

		JAP	KOR	MEX	NL	NOR	NZ	POL	POR	SLK	SPA	SWE	SWI	TUR	USA
Constant		0.924*** (0.024)	0.769*** (0.031)	0.811*** (0.022)	1.849*** (0.023)	1.581*** (0.034)	1.718*** (0.030)	0.947*** (0.035)	1.021*** (0.039)	1.353*** (0.028)	1.422*** (0.023)	1.668*** (0.027)	1.677*** (0.026)	0.614*** (0.037)	1.010*** (0.028)
Generation	Until 1939	-0.742*** (0.097)	-0.793*** (0.184)	-0.565*** (0.148)	-0.516*** (0.030)	-0.704*** (0.047)	-0.669*** (0.092)	-0.642*** (0.069)	-0.595*** (0.086)	-0.431*** (0.071)	-0.844*** (0.028)	-0.469*** (0.039)	-0.780*** (0.043)	-0.301 (0.205)	-0.398*** (0.038)
	1940-49	-0.734*** (0.049)	-0.550*** (0.090)	-0.363*** (0.064)	-0.189*** (0.029)	-0.491*** (0.041)	-0.580*** (0.058)	-0.632*** (0.049)	-0.528*** (0.065)	-0.419*** (0.044)	-0.659*** (0.025)	-0.319*** (0.030)	-0.486*** (0.037)	-0.493*** (0.114)	-0.340*** (0.036)
	1950-59	-0.750*** (0.037)	-0.524*** (0.049)	-0.338*** (0.043)	-0.131*** (0.027)	-0.297*** (0.039)	-0.485*** (0.051)	-0.571*** (0.044)	-0.231*** (0.062)	-0.250*** (0.040)	-0.502*** (0.023)	-0.205*** (0.028)	-0.257*** (0.034)	-0.384*** (0.065)	-0.153*** (0.034)
	1960-69	-0.450*** (0.033)	-0.399*** (0.038)	-0.306*** (0.036)	0.009 (0.024)	-0.195*** (0.034)	-0.169*** (0.043)	-0.277*** (0.043)	-0.167*** (0.060)	-0.223*** (0.036)	-0.296*** (0.023)	-0.062** (0.024)	-0.198*** (0.031)	-0.259*** (0.056)	-0.026 (0.031)
	1970-79	-0.214*** (0.034)	-0.318*** (0.033)	-0.127*** (0.030)	0.049** (0.023)	-0.050 (0.033)	-0.029 (0.041)	-0.230*** (0.039)	-0.078 (0.057)	-0.096*** (0.033)	-0.040* (0.022)	-0.014 (0.025)	-0.051* (0.030)	-0.178*** (0.043)	-0.042 (0.029)
	1980-89	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
Period	Wave 1 (1981-84)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	-	-	-	-	(ref.)	(ref.)	-	-	(ref.)
	Wave 2 (1989-93)	0.379*** (0.041)	-0.048 (0.045)	0.383*** (0.036)	0.194*** (0.022)	0.033 (0.032)	-	(ref.)	(ref.)	(ref.)	0.179*** (0.020)	-0.030 (0.027)	(ref.)	(ref.)	0.248*** (0.027)
	Wave 3 (1994-99)	0.659*** (0.039)	0.170*** (0.043)	0.343*** (0.031)	-	0.299*** (0.034)	(ref.)	0.328*** (0.037)	-	0.438*** (0.030)	0.509*** (0.028)	0.365*** (0.028)	0.344*** (0.025)	-	0.395*** (0.030)
	Wave 4 (1999-04)	0.826*** (0.037)	0.403*** (0.043)	0.565*** (0.035)	0.255*** (0.023)	-	-	0.325*** (0.038)	0.278*** (0.040)	0.354*** (0.029)	0.537*** (0.023)	0.434*** (0.029)	-	-0.094** (0.042)	0.607*** (0.032)
	Wave 5 (2005-07)	0.881*** (0.038)	0.412*** (0.042)	0.773*** (0.034)	0.140*** (0.024)	0.553***	0.099*** (0.031)	0.333*** (0.041)	-	-	0.602*** (0.029)	0.522*** (0.029)	0.441*** (0.026)	-0.011 (0.042)	0.555*** (0.033)
	Log likelihood	-11,245.3	-10,336.1	-17,959.1	-12,045.9	-11,107.2	-4,845.9	-9,098.4	-4,127.0	-8,993.3	-25,736.9	-13,372.7	-9,768.4	-5,176.6	-17,149.4
	Deviance	2,811.0	3,274.5	6,344.4	1,739.0	2,706.4	1,081.8	3,195.0	1,329.9	2,312.4	5,991.8	2,248.2	1,807.3	1,545.0	5,503.0
	(1/df) Pearson	0.579	0.851	0.884	0.244	0.529	0.428	0.926	0.795	0.540	0.540	0.333	0.366	0.897	0.724
	Observations	N=5,082	N=5,784	N=8,504	N=4,134	N=4,275	N=1,868	N=4,881	N=2,093	N=3,694	N=10,617	N=4,741	N=3,573	N=3,502	N=7,791

Dependent variable: Tolerance of homosexuality (range 1 ‘never justifiable’ to 10 ‘always justifiable’).
Significance: ***p<0.01; **p<0.05; *p<0.10.

Table 5.4 Marginal Effects after GLM Predicting Tolerance of Homosexuality, by Country.

		AUL	AUR	BEL	CAN	CZR	DEN	FIN	FRA	GB	GER	HUN	ICE	IRE	ITA
Predicted mean		4.556	4.139	4.054	4.573	5.004	5.285	4.511	4.427	4.228	5.397	1.930	4.942	3.126	3.500
Generation	Until 1939	-2.455***	-2.134***	-2.035***	-2.100***	-2.167***	-2.801***	-2.254***	-2.596***	-2.378***	-3.033***	-0.480***	-2.783***	-2.072***	-2.003***
	1940-49	-1.967***	-2.013***	-1.521***	-1.408***	-1.641***	-1.797***	-2.337***	-1.948***	-1.881***	-2.666***	-0.374***	-2.077***	-1.992***	-1.906***
	1950-59	-1.178***	-1.398***	-1.306***	-0.846***	-1.529***	-1.360***	-1.798***	-1.762***	-1.220***	-1.941***	-0.175***	-1.518***	-1.242***	-1.660***
	1960-69	-0.549***	-0.809***	-0.669***	-0.443***	-0.792***	-0.584***	-0.790***	-0.630***	-0.850***	-1.036***	-0.101***	-1.267***	-1.019***	-0.839***
	1970-79	-0.049	-0.721***	-0.154	-0.094	-0.372***	-0.107	-0.386***	-0.203	-0.240**	-0.290***	-0.122***	-0.179	-0.290**	-0.303***
	1980-89	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
Period	Wave 1 (1981-84)	(ref.)	-	(ref.)	(ref.)	-	(ref.)	(ref.)	(ref.)	(ref.)	-	(ref.)	(ref.)	(ref.)	(ref.)
	Wave 2 (1989-93)	-	(ref.)	0.555***	1.224***	(ref.)	-1.082***	2.279***	0.438***	-0.113	(ref.)	1.761***	2.325***	0.223*	0.970***
	Wave 3 (1994-99)	0.498***	-	-	-	2.529***	-	2.304***	-	1.279***	2.060***	2.663***	-	-	-
	Wave 4 (1999-04)	-	1.585***	1.862***	2.472***	0.933***	0.396**	2.835***	1.666***	1.028***	1.048***	0.168***	3.531***	0.864***	1.755***
	Wave 5 (2005-07)	1.421***	-	-	2.639***	-	-	3.794***	2.707***	1.458***	1.579***	-	-	-	0.030

Dependent variable: Tolerance of homosexuality (range 1 ‘never justifiable’ to 10 ‘always justifiable’).
Significance: ***p<0.01; **p<0.05; *p<0.10.

Table 5.5 Marginal Effects after GLM Predicting Tolerance of Homosexuality, by Country.

		JAP	KOR	MEX	NL	NOR	NZ	POL	POR	SLK	SPA	SWE	SWI	TUR	USA
Predicted mean		3.363	2.197	3.040	6.779	4.944	4.924	2.373	2.643	4.198	4.154	6.176	5.663	1.613	3.324
Generation	Until 1939	-1.779***	-1.207***	-1.316***	-2.887***	-2.652***	-2.451***	-1.159***	-1.229***	-1.491***	-2.582***	-2.384***	-3.264***	-0.420*	-1.137***
	1940-49	-1.828***	-0.939***	-0.934***	-1.190***	-2.023***	-2.278***	-1.195***	-1.158***	-1.500***	-2.178***	-1.747***	-2.290***	-0.634***	-0.995***
	1950-59	-1.954***	-0.932***	-0.891***	-0.844***	-1.316***	-2.005***	-1.128***	-0.564***	-0.961***	-1.770***	-1.175***	-1.328***	-0.529***	-0.481***
	1960-69	-1.323***	-0.764***	-0.826***	0.064	-0.913***	-0.789***	-0.599***	-0.417***	-0.873***	-1.115***	-0.374**	-1.054***	-0.378***	-0.087
	1970-79	-0.670***	-0.641***	-0.370***	0.335**	-0.244	-0.144	-0.512***	-0.201	-0.392***	-0.163*	-0.087	-0.286*	-0.272***	-0.139
	1980-89	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
Period	Wave 1 (1981-84)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	-	-	-	-	(ref.)	(ref.)	-	-	(ref.)
	Wave 2 (1989-93)	1.406***	-0.103***	1.326***	1.381***	0.163	-	(ref.)	(ref.)	(ref.)	0.764***	-0.186	(ref.)	(ref.)	0.883***
	Wave 3 (1994-99)	2.764***	0.392***	1.134***	-	1.593***	(ref.)	0.853***	-	2.049***	2.607***	2.533***	2.086***	-	1.498***
	Wave 4 (1999-04)	3.552***	1.004***	2.103***	1.850***	-	-	0.852***	0.748***	1.591***	2.631***	3.070***	-	-0.150**	2.530***
	Wave 5 (2005-07)	4.011***	1.027***	3.107***	0.986***	3.208***	0.490***	0.883***	-	-	3.219***	3.800***	2.716***	-0.017	2.268***

Dependent variable: Tolerance of homosexuality (range 1 ‘never justifiable’ to 10 ‘always justifiable’).
Significance: ***p<0.01; **p<0.05; *p<0.10.

Table 5.6 R-squared Values from Stepwise OLS Models Predicting Tolerance of Homosexuality.

	AUL	AUR	BEL	CAN	CZR	DEN	FIN	FRA	GB	GER	HUN	ICE	IRE	ITA
Generations only	0.088***	0.106***	0.095***	0.077***	0.058***	0.094***	0.040***	0.166***	0.139***	0.168***	0.012***	0.160***	0.151***	0.119***
Generations and waves	0.114***	0.164***	0.139***	0.130***	0.120***	0.123***	0.126***	0.230***	0.173***	0.210***	0.118***	0.290***	0.166***	0.165***
Change in R squared	0.027***	0.058***	0.043***	0.054***	0.061***	0.029***	0.087***	0.064***	0.034***	0.043***	0.106***	0.130***	0.015***	0.046***
Improvement	23.5%	35.4%	31.3%	41.2%	51.2%	23.8%	68.5%	27.8%	19.9%	20.3%	89.7%	44.9%	9.2%	27.7%
Number of waves	3	2	3	4	3	3	5	4	5	4	4	3	3	4

	JAP	KOR	MEX	NL	NOR	NZ	POL	POR	SLK	SPA	SWE	SWI	TUR	USA
Generations only	0.065***	0.044***	0.008***	0.108***	0.141***	0.093***	0.072***	0.043***	0.051***	0.200***	0.118***	0.149***	0.016***	0.053***
Generations and waves	0.288***	0.087***	0.081***	0.138***	0.238***	0.098***	0.093***	0.067***	0.113***	0.272***	0.252***	0.228***	0.018***	0.109***
Change in R squared	0.162***	0.043***	0.073***	0.031***	0.097***	0.006***	0.021***	0.023***	0.062***	0.071***	0.135***	0.079***	0.002**	0.056***
Improvement	71.3%	49.7%	90.4%	22.0%	40.6%	5.7%	23.0%	34.8%	54.7%	26.3%	53.4%	34.6%	10.7%	51.7%
Number of waves	5	5	5	4	4	2	4	2	3	5	5	3	3	5

Dependent variable: Tolerance of homosexuality (range 1 ‘never justifiable’ to 10 ‘always justifiable’).
Significance: ***p<0.01; **p<0.05; *p<0.10.

Up to this point, I have proved the importance of period effects, namely adult change, to explain the evolution of tolerance to homosexuality across a set of industrially advanced democracies. However, a test of causality with observational data of this kind has to take into account control variables. Before entering into the multilevel analysis, I select a group of three countries which are exhaustively surveyed over the five waves of the WVS: Spain, Sweden and USA. I choose this subgroup of nations because they are very different from one another in many ways, although they also share commonalities. All of them have experienced economic growth over the period of observations, and their prosperity levels have risen considerable by the end of the series. The Spanish case is of special interest in this respect, since departing from lower stages of development has undergone an accelerated process of modernization in a relatively brief period of time. This makes Spain a particularly good candidate to find intra-cohort changes in attitudes.

The levels of income inequality are however different in each country, representing three ideal types in terms of income distribution in the developed world: USA traditionally depicts one of the highest levels of income inequality; Spain is at the middle range of the distribution; and Sweden, with its advanced welfare state model, portrays low income differences. In terms of religiosity, the USA has been pointed as a deviant case among industrially advanced societies, with soaring religious practice and beliefs. Spain has moved from a dictatorship where the Catholic Church exerted a tremendous influence in all spheres of society, to an almost fully secularized democracy in just a few decades. Sweden is a deeply secularized Protestant country, in which religion started to lose its credence earlier than the period observed in the WVS. Sweden also registered higher levels of tolerance of homosexuality earlier than the other countries. The US, coming from a somewhat more antigay past, is still rather intolerant, although it has become more acceptant over time (Andersen and Fetner 2008a). Spain portrays the same type of evolution in attitudes to homosexuality as its meteoric process of modernization suggested: departing from a strong antigay background has now one of the most tolerant populations in the Western world. This tremendous transformation had its main societal consequence in the form of the full legalization of same sex marriage passed by the *Cortes Generales* (Spain's bicameral Parliament) in July 2005. Table 5.7 presents the outcomes of the Gamma regression models for each of these three countries, adding gender, marital status, education, and church attendance as control variables. Period effects remain relevant in all cases.

Table 5.7 Results from Gamma Models with Control Variables Predicting Tolerance of Homosexuality in Spain, Sweden and the USA.

	Spain		Sweden		USA	
	Coeff. (SE)	dy/dx	Coeff. (SE)	dy/dx	Coeff. (SE)	dy/dx
Constant	2.055***		2.101***		1.684***	
	(0.026)		(0.021)		(0.041)	
Generations						
Until 1939	-0.631***	-2.760	-0.216***	-1.478	-0.358***	-1.252
	(0.044)		(0.076)		(0.068)	
1940-49	-0.434***	-2.111	-0.280***	-1.903	-0.203***	-0.769
	(0.031)		(0.028)		(0.048)	
1950-59	-0.301***	-1.559	-0.176***	-1.250	-0.093**	-0.367
	(0.027)		(0.025)		(0.043)	
1960-69	-0.152***	-0.829	-0.077***	-0.571	-0.068*	-0.272
	(0.027)		(0.021)		(0.037)	
1970-79	-0.041	-0.231	-0.049**	-0.364	-0.081**	-0.325
	(0.025)		(0.022)		(0.033)	
1980-89	(ref.)		(ref.)		(ref.)	
Waves						
Wave 3 (1994-99)	(ref.)		(ref.)		(ref.)	
Wave 4 (1999-04)	0.031	0.180	0.068***	0.520	0.232***	0.999
	(0.020)		(0.018)		(0.030)	
Wave 5 (2005-07)	0.078***	0.460	0.119***	0.923	0.248***	1.072
	(0.024)		(0.019)		(0.031)	
Male	-0.104***	-0.060	-0.147***	-1.120	-0.182***	-0.749
	(0.017)		(0.015)		(0.025)	
Married	-0.066***	-0.384	-0.007	-0.051	-0.077***	-0.316
	(0.018)		(0.016)		(0.025)	
High education	0.123***	0.742	0.174***	1.353	0.320***	1.383
	(0.023)		(0.016)		(0.027)	
Church Attendance						
Once a month	-0.293***	-1.609	-0.267***	-1.819	-0.519***	-2.221
	(0.022)		(0.028)		(0.033)	
Once a year	-0.135***	-0.758	-0.056***	-0.421	-0.187***	-0.735
	(0.020)		(0.016)		(0.037)	
Never	(ref.)		(ref.)		(ref.)	
Log likelihood	-12,210.8		-8,694.5		-9,051.7	
Deviance	1,814.2		783.8		2,385.1	
(1/df) Pearson	0.292		0.156		0.550	
Observations	N=4,440		N=2,873		N=3,750	

Dependent variable: Tolerance of homosexuality (range 1 ‘never justifiable’ to 10 ‘always justifiable’). Significance: ***p<0.01; **p<0.05; *p<0.10.

Hierarchical Linear Models

Now I move onto the multilevel analysis, both to simultaneously model the age, period and cohort components and to offer an all-encompassing explanation of tolerance of homosexuality across countries, individuals and over time. In table 5.8, I simultaneously model the effects of the three APC components on tolerance of homosexuality across 28 OECD nations over the five waves of the WVS.

Table 5.8 Estimates of Hierarchical Linear Models Predicting Tolerance of Homosexuality in 28 OECD Countries (Individuals within Countries and Waves).

		APC model		
		Coeff.		SE
Estimates of fixed effects				
	Intercept	4.611	***	0.385
Level 1	Generation			
Individuals	Until 1939	-0.609	***	0.103
	1940-49	-0.591	***	0.081
	1950-59	-0.454	***	0.064
	1960-69	-0.119	**	0.048
	1970-79	0.049		0.033
	1980-89	(ref.)		
	Age	-0.036	***	0.002
Level 2				
Countries by waves	Waves	0.509	***	0.115
Estimates of covariance parameters				
	Residual	8.467	***	0.033
	Intercept	2.365	***	0.339
Intraclass correlation (ρ)		21.8	%	
Deviance		659473.0		
AIC		659477.0		

Significance: ***p<0.01; **p<0.05; *p<0.10.

The model takes countries by waves as second level units. As can be seen, each generation is more acceptant of homosexuality than the previous one, confirming previous findings. However, people appear also to become less tolerant as they age.

This age effect has not been addressed by Inglehart, and although part of the empirical literature points in this direction, systematic efforts to control for the age-period-cohort components were never explicitly applied. Although collinearity problems may arise because of the overlapping of age and generations, it seems that the older the person gets, the less acceptant of homosexuality s/he is. The possibility of conservatism increasing with age is not counterintuitive. People in their younger years might be more open-minded as they happen to meet diverse types of people and experience with different life-styles, whereas when entering maturity they could increasingly become more traditional as their range of experiences and social networks narrows.

All in all, age and cohort effects happen to go in the same direction: individuals of older age are less tolerant. Irrespective of the possible overlapping of these two components, period effects appear significant and pointing into the opposite direction: to an overall and generalized increase in acceptance of homosexuality. Even with the limited statistical power provided by the sample of waves and countries, clear linear period effects emerge strongly. Each new wave has meant an overall increase in tolerance of more than half a point (0.509) across countries.

However, I need to introduce enough controls in my multilevel regression models to be able to exclude the effect of additional confounder variables which may affect tolerance. Any examination of national variations must account for compositional differences that may confound the impact of the context variables of interest (Andersen and Fetner 2008b). Many individual-level factors are related to tolerance, so that it is important to control them when trying to assess differences related to national-level characteristics. I need to further verify whether context variables remain significant while applying controls for compositional differences. Therefore, I design the models presented in table 5.9. The purpose of these models is also to offer an all-encompassing explanation of tolerance of homosexuality across individuals, countries, and over time.

In this new set of multilevel models, I finally decide to exclude age. As seen in the previous analysis, the effects of age point into the same direction of generational ones; in fact, they could overlap and confound each other. When modeled together, age effects do not erode generation effects, but diminish their impact (see table 5.8). By excluding them, I get rid of the potential collinearity they would bring to the models.

Moreover, potential life course effects, indirectly measured by chronological age, are also included in the model through alternative indicators such as marital status. In any case, in the set of models presented in table 5.9, generation effects could be interpreted as containing both true cohort effects and potential age effects. Individual cases are considered to be nested within countries, and as in most models in the literature waves are considered to be an individual level characteristic (see Andersen and Fetner 2008b or Mulligan 2010 for an example). I make the assumption that age effects do not matter, and focus on the confrontation between generation and period effects. This assumption is not risky, since formerly I have seen that generation and age effects seem to go in the same direction; in fact, they could overlap due to collinearity problems and a lack of observations over time.

In table 5.9, I present the hierarchical linear models predicting tolerance of homosexuality across individuals, countries and over time. In this case, second level units are considered to be just countries. Model 1 includes only generational groups and the wave of the survey. It shows the presence of strong generational effects across countries, confirming what we have seen so far in previous analysis. The outcome also indicates the presence of strong period effects. Each new wave accounts for an increase in tolerance of homosexuality of almost half a point (0.481). This figure is similar to the models where APC effects are simultaneously accounted (0.509). Therefore, period effects seem to be equally relevant in explaining change over time in attitudes to homosexuality, contradicting Inglehart's theory. The average difference between the effects on tolerance of the youngest and the oldest generation is of 2.628 points (in a 10 points scale), almost the same distance which separates the first from the last wave: 2.405. But while less than 30 years, to the most, detach the first from the fifth wave of the WVS, the distance from the youngest to the oldest generation more than doubles that amount of time. This would mean that period effects can be much more powerful and immediate than generational ones. Both generation and period effects go together in the same direction, bringing higher levels of tolerance of homosexuality as time passes. Figure 5.5 portrays the information of model 1 in a visual manner, to better grasp the huge variation in tolerance across generations and waves that has been actually taking place.

Table 5.9 Estimates of Hierarchical Linear Models Predicting Tolerance of Homosexuality in 28 OECD Countries (Individuals within Countries).

		Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7		Model 8	
		Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
Estimates of fixed effects																	
	Intercept	3.755 ***	0.275	3.737 ***	0.281	-6.671 ***	2.305	2.518	4.579	2.386	4.764	3.292	4.680	3.718	4.830	3.356	4.747
Level 1	*Generation*																
Individuals	Until 1939	-2.628 ***	0.036	-2.236 ***	0.083	-2.238 ***	0.083	-2.251 ***	0.083	-2.247 ***	0.083	-2.242 ***	0.083	-2.229 ***	0.083	-2.231 ***	0.083
	1940-49	-2.119 ***	0.030	-1.689 ***	0.054	-1.690 ***	0.054	-1.705 ***	0.054	-1.706 ***	0.054	-1.706 ***	0.054	-1.695 ***	0.054	-1.695 ***	0.054
	1950-59	-1.651 ***	0.027	-1.147 ***	0.046	-1.148 ***	0.046	-1.154 ***	0.046	-1.159 ***	0.046	-1.160 ***	0.046	-1.150 ***	0.046	-1.150 ***	0.046
	1960-69	-0.958 ***	0.025	-0.743 ***	0.042	-0.744 ***	0.042	-0.750 ***	0.042	-0.757 ***	0.042	-0.758 ***	0.042	-0.756 ***	0.041	-0.758 ***	0.041
	1970-79	-0.432 ***	0.023	-0.311 ***	0.038	-0.312 ***	0.038	-0.315 ***	0.038	-0.316 ***	0.038	-0.318 ***	0.038	-0.320 ***	0.038	-0.321 ***	0.038
	1980-89	(ref.)		(ref.)		(ref.)		(ref.)		(ref.)		(ref.)		(ref.)		(ref.)	
	Waves	0.481 ***	0.007	0.297 ***	0.022	0.297 ***	0.022	0.413 ***	0.053	0.391 ***	0.054	0.387 ***	0.054	0.405 ***	0.054	0.402 ***	0.054
	Male			-0.824 ***	0.028	-0.823 ***	0.028	-0.827 ***	0.028	-0.824 ***	0.028	-0.825 ***	0.028	-0.848 ***	0.097	-2.278 ***	0.396
	Married			-0.320 ***	0.029	-0.319 ***	0.029	-0.317 ***	0.029	-0.320 ***	0.029	-0.321 ***	0.029	-0.323 ***	0.029	-0.324 ***	0.029
	High education			0.922 ***	0.038	0.921 ***	0.038	0.907 ***	0.038	0.908 ***	0.038	0.912 ***	0.038	0.905 ***	0.087	2.162 ***	0.328
	Social class																
	Managers			0.259 ***	0.049	0.259 ***	0.049	0.252 ***	0.049	0.267 ***	0.075	-1.151	0.853	0.260 ***	0.049	0.261 ***	0.049
	Professionals			0.565 ***	0.050	0.564 ***	0.050	0.565 ***	0.050	0.512 ***	0.108	-4.740 ***	0.740	0.592 ***	0.050	0.593 ***	0.050
	Routine nonmanual			0.443 ***	0.035	0.443 ***	0.035	0.442 ***	0.035	0.478 ***	0.080	-2.513 **	0.912	0.446 ***	0.035	0.445 ***	0.035
	Working class			(ref.)		(ref.)		(ref.)		(ref.)		(ref.)		(ref.)		(ref.)	
	Postmaterialist			0.679 ***	0.023	0.679 ***	0.023	0.678 ***	0.023	0.679 ***	0.023	0.678 ***	0.023	0.616 ***	0.073	1.514 ***	0.318
	Catholic			0.184 ***	0.038	0.183 ***	0.038	0.171 ***	0.038	0.171 ***	0.038	0.172 ***	0.038	0.177 ***	0.038	0.179 ***	0.038
	Protestant			-0.043	0.045	-0.045	0.045	-0.063	0.045	-0.063	0.045	-0.062	0.045	-0.057	0.045	-0.055	0.045
	Church attendance			-0.260 ***	0.007	-0.260 ***	0.007	-0.259 ***	0.007	-0.261 ***	0.007	-0.262 ***	0.007	-0.261 ***	0.007	-0.261 ***	0.007
	Community size			0.145 ***	0.010	0.144 ***	0.010	0.142 ***	0.010	0.142 ***	0.010	0.144 ***	0.010	0.147 ***	0.010	0.147 ***	0.010
Level 2	*Country averaged*																
Countries	HDI					13.092 ***	2.886	4.113	4.597	4.156	4.783	3.120	4.699	1.824	4.878	2.063	4.792
	Gini coefficient							-8.350 **	4.046	-7.837 *	4.208	-8.055 *	4.131	-6.737	4.173	-6.115	4.122
	Protestant							0.532	0.460	0.489	0.479	0.505	0.470	0.787	0.477	0.753	0.470
	PDI postmat.							0.009	0.013	0.005	0.014	0.006	0.014	-0.007	0.014	-0.006	0.014

	Change over time																								
	HDI									-3.086		1.969	-2.320		1.982	-2.106		1.979	-2.566		1.986	-2.470		1.984
	Gini coefficient									-12.707	***	1.429	-13.143	***	1.436	-13.329	***	1.435	-11.612	***	1.439	-11.603	***	1.438
Cross-level interactions	HDI * Managers															1.770		1.061						
	HDI * Professionals															6.553	***	0.914						
	HDI * Routine nonmanual															3.728	***	1.135						
	Gini * High edu.																					-4.134	***	1.054
	Gini * Male																					4.695	***	1.276
	Gini * Postmat.																					-2.932	***	1.018
Estimates of covariance parameters																								
	Residual	8.760	***	0.034	8.316	***	0.055	8.312	***	0.055	8.297	***	0.055	8.263	***	0.055	8.265	***	0.055	8.210	***	0.055	8.210	***	0.055
	Intercept	2.100	***	0.572	1.617	***	0.470	0.848	***	0.242	0.721	***	0.206	0.777	***	0.223	0.749	***	0.214	0.701	***	0.220	0.682	***	0.213
	Managers													0.066	*	0.039	0.046		0.033						
	Professionals													0.197	**	0.084	0.019		0.023						
	Routine nonmanual													0.119	**	0.049	0.074	**	0.034						
	High education																			0.140	***	0.054	0.069	**	0.031
	Male																			0.206	***	0.072	0.125	***	0.045
	Postmaterialist																			0.113	***	0.038	0.081	***	0.028
Model comparisons																									
Intraclass correlation (ρ)		19.3	%		16.3	%		9.3	%		8.0	%													
Number of parameters		9			20			21			26			29			32			29			32		
Deviance		663,581.2			223,504.3			223,401.6			223,312.9			223,224.1			223,192.0			222,994.3			222,962.9		
χ^2 Model improv. (prev. model)					440,076.8	***		102.8	***		88.6	***		88.8	***		32.1	***		318.6	***		261.3	***	
AIC		663,585.2			223,508.3			223,443.6			223,364.9			223,282.1			223,256.0			223,052.3			223,026.9		

Significance: ***p<0.01; **p<0.05; *p<0.10.

Model 2 comprises the whole set of individual level predictors. When this group of indicators is included, they imply just a slight reduction in the coefficients of generations and waves, which still remain strong and statistically significant. Therefore, compositional effects are not capable of eroding the impact of generational and periodic components. The inclusion of the set of individual-level characteristics provides a huge improvement in model's explanatory capacity. With respect to model 1 it means a 440,077 reduction in deviance. The rest of the first level covariates behave consistently with what has been found in previous research. Male are considerably less tolerant than female respondents (-0.824). Married people are also less acceptant of homosexuality than the rest of marital status situations. Being married is a life cycle indicator, and once controlled by age (or generation, in this case), it can be understood as reflecting the independent effect of staying in a particular stage of the life course. As its significant coefficient shows, there seems to be an increase in conservatism and rejection of alternative lifestyles and outgroups among those who follow the conventional path of marriage. The true direction of causality, however, could only be determined if panel data would have been used.

Having a college degree increases acceptance levels very much (0.922). Social class, as indicated by Andersen and Fetner (2008b), has also an important effect on attitudes to homosexuality, even after controlling by education. Working class people have lower levels of tolerance, when compared to routine nonmanual and professionals, who are clearly more tolerant. Managers are only slightly more acceptant than the working class, perhaps because of their ideological conservatism. *Ceteris paribus*, people holding postmaterialist values tend to be more tolerant of homosexuality. Even after controlling for education and social class, postmaterialist values by themselves are able to significantly increase tolerance (0.679). The size of the municipality in which the respondent lives also matters in terms of tolerance. As seen in the literature, smaller towns tend to be more homogenous and produce a type of "localite" dwelling which is more suspicious of outgroups than citizens living in larger cities.

Religious denomination does not to have a strong impact on tolerance, once church attendance is controlled for. Being Protestant has no effects, and belonging to the Catholic community can even increase tolerance (0.184). How can this apparently counterintuitive finding be explained? If we performed another hierarchical regression

excluding church attendance (results not shown), belonging to either religious denominations happens to have a negative and significant effect on tolerance (-0.31 for Catholics and -0.36 for Protestants). What happens then is that religious denomination absorbs part of the effect of church attendance, being the latter the more relevant of the two religious indicators. I also perform another hierarchical regression model with interactions of time period with each of the first-level predictors to see whether the effects of these independent variables change over time (not shown for the sake of simplicity). The results indicate that the impact of being catholic has indeed changed over the period of observations, as Catholics have become increasingly more acceptant of homosexuality. If this is not observed so clearly in the case of Protestants, could be due to the fact that they were already more tolerant on the first place. In conclusion, religious practice seems to matter more than religious denomination, at least nowadays. The more frequently people go to church, the less tolerant of homosexuality they are.

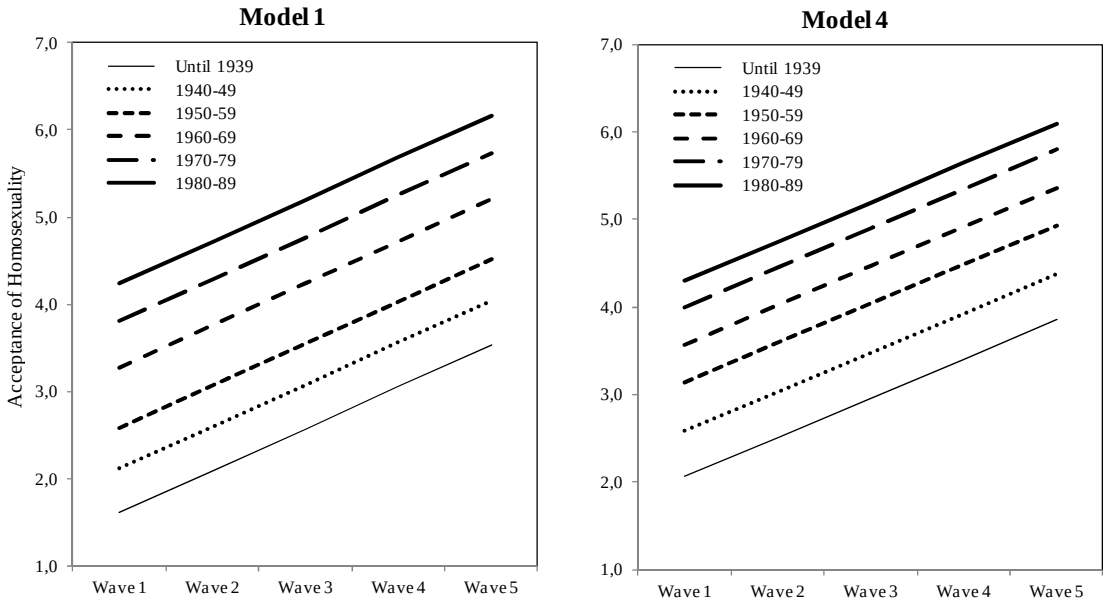
Model 3 includes a random intercept and just one country-level predictor. In order to test Inglehart's approach, and following Andersen and Fetner (2008b), I include just the country's level of human development averaged across waves. It has an important impact on acceptance of homosexuality (13.092), so that the more developed the country, the more tolerant its citizens are. The reduction in deviance is as well highly significant (102.8), for being the case of just adding one additional variable to the previous model. And the amount of second-level variance explained is also considerable: the intraclass correlation jumps from 16.3% to 9.3%, though the intercept remains being statistically significant.

Model 4 includes the whole set of country-level predictors, some of which are devoted to capture static cross-country differences while others try to measure dissimilarities in their dynamics over time. The inclusion of the complete set of predictors provides a bit lower reduction in deviance (88.6%) though still relevant, and finally the intercept becomes not significant. With respect to the static dimension of analysis, the effect of the level of development as measured by the HDI ceases to be statistically significant when income inequality is included. Therefore, at least in this group of already developed countries, it is not the level of development what best explains the variance in tolerance of homosexuality, but income inequality. The way in which wealth is distributed within a given society matters more than its actual level of development in

terms of explaining differences in tolerance. More unequal countries are more intolerant of homosexuality. Neither the religious creed, nor the contextual level of postmaterialism seems to matter when controlled by the rest of the factors in the model.

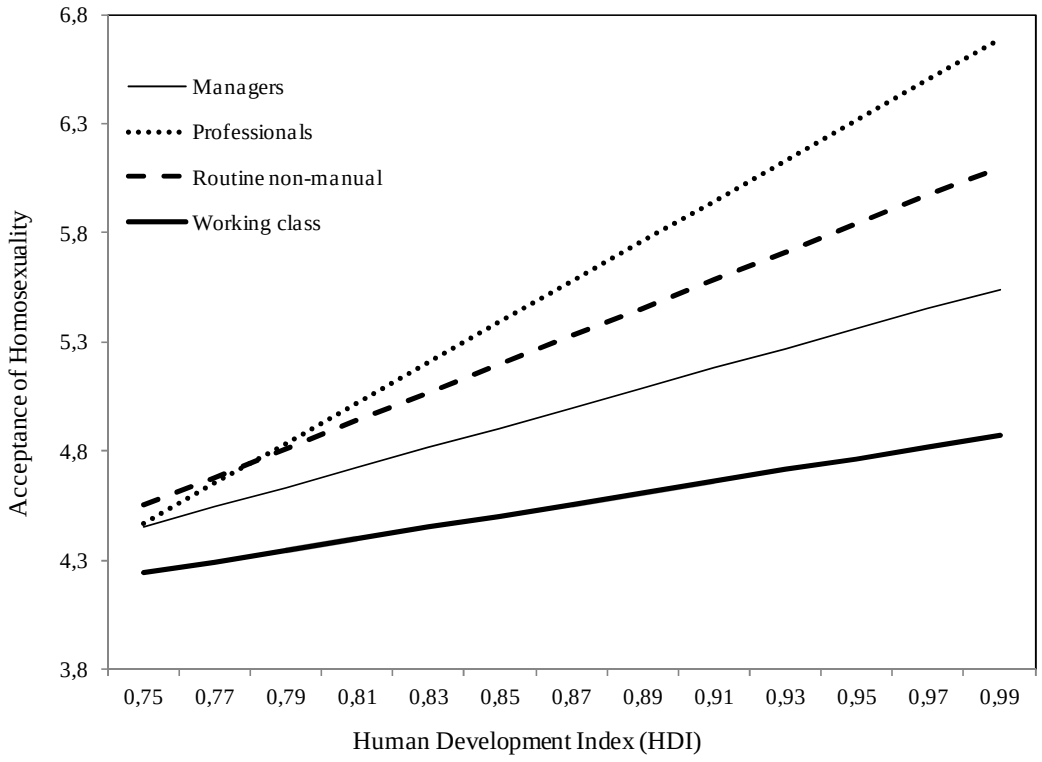
With respect to the dynamic effects of contextual indicators, the evolution of the HDI does not have any statistically significant impact, in tune with its static counterpart. The coefficient has a negative sign –contrary to what we might expect, perhaps because it is reflecting a sort of ceiling effect. Actually, what appears to be the most important predictor is the evolution of income inequality (-12.707). The more unequal the countries turn over time, the more intolerant to homosexuality they become, and vice versa. This piece of evidence is consistent with my main argument regarding the capacity of the time varying contextual factors to affect individual values and abstract or symbolic predispositions in real-time. All in all, both generation and period effects remain significant and with strong coefficients when controls at different levels are included. Figure 5.5 portrays the predicted impact on tolerance of homosexuality of period and generation effects before (model 1) and after including those controls (model 4).

Figure 5.5 Predicted Values of Tolerance of Homosexuality across Generations and over Time.



Model 5 replicates and substantially expands Andersen and Fetner (2008b) main analysis about the interaction of economic development at the context level and inequality at the individual level. Instead of using the GDP per capita – as they actually did, I employ a more comprehensive measure of development: the HDI. Moreover, I extend their analysis by taking into account more waves, more explanatory factors and an explicitly dynamic explanation of tolerance of homosexuality. As these authors did, I include random components for the effects of social class, their indicator of individual-level inequality. The model therefore allows social class to have different effects across the various social contexts. The results point to the adequacy of performing cross-level interactions, as the random coefficients for social classes are all statistically significant. The model is significantly improved with respect to the previous one (88.8 reduction in deviance), meaning that the effects of social class indeed vary according to national context.

Figure 5.6 Predicted Values of Tolerance of Homosexuality According to Human Development and Social Class.



Model 6 includes the cross-level interaction between country's development and social class at the individual-level. Figure 5.6 shows the fitted attitude scores for all four social

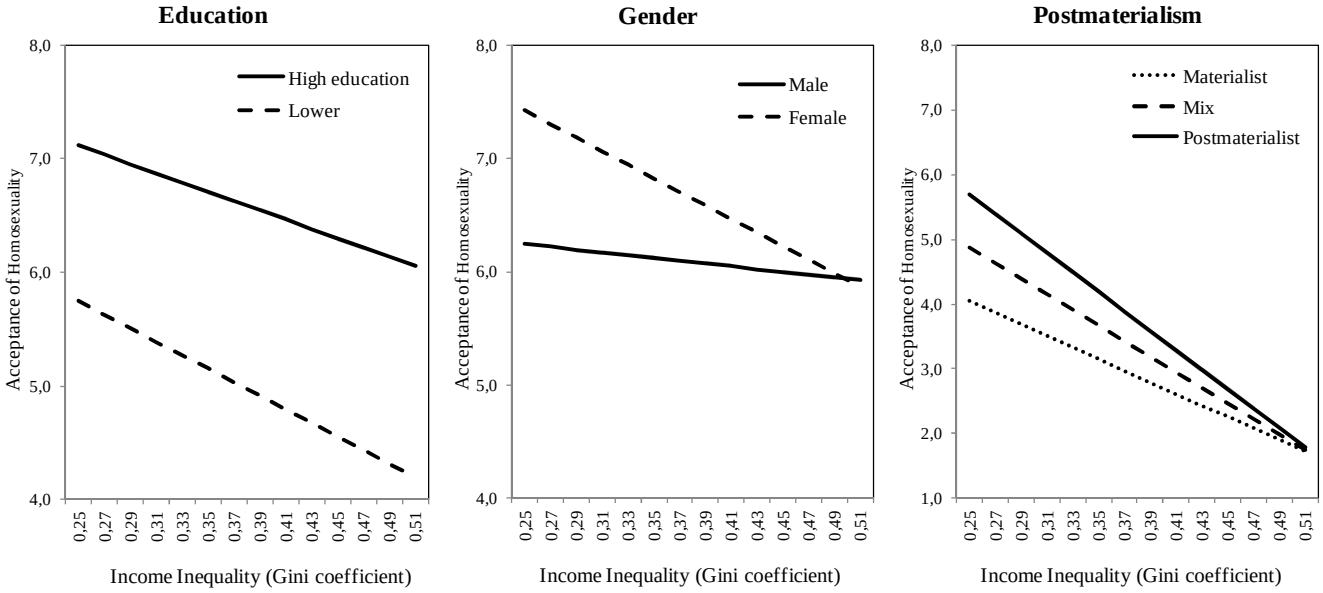
classes through the range of HDI. Similar to Andersen and Fetner findings (2008b), social class and HDI interact in their effects on tolerance: classes differ in terms of average attitudes toward homosexuality as the HDI for the country increases. The model supports Inglehart's modernization theory that the level of development predicts tolerance of homosexuality. But this effect does not hold equally for all social classes, contradicting Inglehart's assumptions (see 1987, and the discussion in Andersen and Fetner 2008b)[40]. An increase in the HDI affects professionals and routine non-manual workers much more than the working class. Managers are somewhere in the middle: their levels of tolerance change more easily than those of the working class, but less than the other two professional groups. In other words, the attitudes of the working class are much more difficult to change. Therefore, we may conclude that both inequalities across nations and within nations affect tolerance. The impact of this interaction on tolerance is remarkable, since the coefficients are relatively high. Random variance components for social class are clearly reduced in this model, and the individual interaction terms are all statistically significant except from that of the managers, which behaves quite similarly to that of the working class.

Model 7 tries a different specification by considering the possibility that the effects of gender, education and postmaterialism vary across countries. The improvement in terms of deviance with respect to model 4 (318.6) is higher than that produced by social class. The random variance components of the three first-level predictors portray significant and high coefficients. These results suggest the possible presence of cross-level interactions. In this respect, model 8 explicitly accounts for the possible interaction of contextual level inequality and these three individual level predictors finding a better fit than previous models. My underlying hypothesis is that country's income inequality creates a particular context which is able to alter the effects of many determinants of tolerance. In fact, the inclusion of the interaction terms yields a considerable improvement of model's explanatory capacity (261.3 deviance reduction). All the

[40] Inglehart's theory assumes that when economic development reaches a particularly high level, inequality lessens to the point that it no longer influences values (Inglehart 1987). He considers that economic prosperity affects the attitudes of citizens in all economic positions within a given nation in a similar way. On the contrary, Andersen and Fetner (2008b) argue that differences in economic conditions and life chances according to income group, social class, and occupation, even within rich democracies make such an assumption quite untenable. They argue that all members of society do not benefit equally from economic development: those from a lower economic position, who are not totally free of material concerns, will portray less tolerance than those with high economic standing.

coefficients of the cross-level interactions are significant, and substantially high. Moreover, the static effect of income inequality ceases to be significant with this new specification. Figure 5.7 graphically presents the expected tolerance of homosexuality across the different groups used for the cross-level interactions.

Figure 5.7 Predicted Values of Tolerance of Homosexuality According to Income Inequality, Education, Gender and Materialist/Postmaterialist Values.



The tolerance of those who did not attend higher education, which is the majority of the population, drops dramatically when country's inequality increases. Their tolerance levels are more severely reduced than those holding college degrees. In other words, in countries with lower inequality levels, the tolerance of homosexuality is more similar across educational groups and vice versa. The second interaction of inequality presented in figure 5.7 is with gender. Women in societies with high income equality levels are far more tolerant of homosexuality than men. However, as social inequality increases, women tend to resemble the masculine patterns of tolerance. Men's tolerance, usually lower than that of women, remains relatively unaffected by country's income inequality in comparison. The effects of postmaterialism also vary across different levels of country's income inequality. The more unequal a country becomes, the more similar the levels of tolerance of the three categories of Inglehart's typology: materialist, mixed, and postmaterialist individuals. In contexts with lower inequality, postmaterialists are clearly more tolerant than people with mixed values, and those in turn are more tolerant

than materialists. However, as the country becomes more unequal, these categories tend to resemble one another. They all become less tolerant, but at different speeds: postmaterialists change more rapidly, alongside the mixed group whose rate of change is not that quick, and finally the materialist people which is the one category that changes at a slower pace.

All in all, both the cross-level interactions of country's development with social class (model 6) and of income inequality with education, gender and postmaterialism (model 8) contribute to a further understanding of the patterns of tolerance of homosexuality across and within countries. However with the analysis performed here, I particularly want to underline the need for taking into account the contextual effects of income inequality over economic development, mostly when affluent societies are to be analyzed. Inglehart's approach to individual modernity processes needs to take into consideration this evidence in order to offer a more refined explanation of the differences across nations which are already wealthy. In general, my analysis has shown that income inequality is a key determinant of tolerance of homosexuality: 1) it explains part of the within country variance in tolerance (when measured as social class); 2) it predicts cross-country differences in tolerance better than development *per se* (through the static measure of income inequality); 3) it clearly contributes to explain the evolution of aggregate levels of tolerance as an exogenous time-varying covariate; 4) and it mediates the effects of individual level predictors of tolerance in a substantial way.

The statistical analysis performed so far is not able to identify one hidden source of generation effects: cohort replacement. This type of demographic effect is subsumed within the aggregate yearly figures, and could upwardly bias the estimation of the contribution of period effects to actual changes in tolerance over time. In order to control for cohort replacement effects, I apply a robustness check into the main multilevel analysis of table 5.9. Table 5.10 presents a replication of that analysis but using just a subsample of the total: those coming of age between 1963 and 1982. In this restricted subsample, generational replacement is less likely to have biased the estimation of periodic effects, since mortality rates could not have affected substantially this relatively "young" cohort. Therefore, if we should identify period effects, they would more clearly reflect intracohort changes.

Table 5.10 Robustness check.

		Only the subsample of cohort 1963-82		
Estimates of fixed effects				
	Intercept	2.690		4.795
Level 1	Gen. 1963-72	(ref.)		
Individuals	Gen. 1973-82	0.361	***	0.044
	Waves	0.525	***	0.082
	Male	-0.834	***	0.046
	Married	-0.275	***	0.050
	High education	1.013	***	0.060
	Social class			
	Managers	0.407	***	0.075
	Professionals	0.505	***	0.078
	Routine nonmanual	0.452	***	0.057
	Working class	(ref.)		
	Postmaterialist	0.737	***	0.037
	Catholic	0.090		0.061
	Protestant	-0.067		0.071
	Church attendance	-0.270	***	0.011
	Community size	0.148	***	0.016
Level 2	*Country averaged*			
Countries	HDI	2.912		4.816
	Gini coefficient	-8.799	**	4.225
	Protestant	0.412		0.482
	PDI postmat.	0.014		0.014
	Change over time			
	HDI	-9.332	***	3.105
	Gini coefficient	-8.260	***	2.337
Estimates of covariance parameters				
	Residual	8.304	***	0.089
	Intercept	0.776	***	0.225
Model comparisons				
Intraclass correlation (ρ)		8.5	%	
Deviance		85597.1		
AIC		85641.1		

Significance: ***p<0.01; **p<0.05; *p<0.10.

Even within this subset of "survivors", this is, those less likely to be affected by demographic mortality over the period of observations, period effects are equally relevant. The wave coefficient portrays similar values as those in previous analysis with the full sample of individuals. The dynamic effects of income inequality at the contextual level also remain as highly significant. Moreover, all the relationships at the individual and country levels still hold in the robustness check, as in the model which

operates on the full sample of respondents. It is also possible to appreciate that even the slightly younger generation (those coming of age between 1973 and 1982) is still more tolerant of homosexuality that the older one.

Concluding Remarks

In this part of the dissertation I have presented clear evidences that the deep change in tolerance of homosexuality experienced by most of the countries in the developed world between 1981 and 2007 comes from a self-actualization of attitudes, and not just from generation effects. In a sense, this finding contradicts the thesis about the age-stability of values in Inglehart's theory and its equivalent in the field of attitudes (see Alwin and Kronsick 1991, among others). The choice of tolerance of homosexuality as object of analysis was motivated by the role it played in Inglehart's individual modernity theory, and as an alternative indicator of the modernization process. The fact that it follows the same kind of upward trend as postmaterialist values, but does not necessarily suffer from its same measurement problems, can give credit to the idea that modernization takes place at "real-time", and not just at the slow pace of cohort replacement.

Conclusions

CONCLUSIONS

In this dissertation I have presented multiple evidences that values and abstract or symbolic attitudes can consistently be modified during adult life in response to contextual changes. Individuals live in a particular country at a particular moment in time. Countries may experience transformations over time as a result of processes such as modernization. When environments change, the actual life circumstances of people might be modified, fostering the need to adapt or adjust to the new conditions. Most theories of values as well as the political socialization approach tend to focus on the capacity of individual adjustment during just a particular moment in the life course: the impressionable years, the period from late adolescence to early adulthood. However, across this investigation, I have demonstrated that people can adapt to contextual changes along their entire life span. I have performed several cohort analyses using cross-sectional data, instead of employing panel data to study individual changes. In my research, I have shown that cohorts do not remain stable in their values and attitudes as they become older, following the aging-stability hypothesis. Contrary to value theories and most of the political socialization literature, values and attitudes linked to the process of modernization experience profound within-cohort changes, which can be even larger than between-cohort differences or the effects of cohort replacement. Moreover, I sustain than within-cohort changes caused by period effects have the same pattern than that of between-cohort differences, given that they are both caused by the same external forces of modernization. Each new generation has been raised in an increasingly secure environment, as well as every existing cohort has lived in a gradually wealthier context over their life course. As a result, the cultural modernization process postulated by Ronald Inglehart has been taking place far quicker than he predicted.

In fact, generation and period effects should be understood as interconnected entities. Period effects are not just random shocks seemingly unrelated to the general pattern of social change. They can portray a trend, the same kind of trend that originates generational differences. And this is because people are potentially influenced by contextual forces over their entire lives. Those influences may be more intense during the impressionable years, but people do not cease to adjust after that period. In this

dissertation, I have focused on the study of how external or contextual forces have the capacity to shape individual values and attitudes. However, internal or developmental factors linked to age can also affect value and attitude dynamics. The type of data I employed had some limitations in assessing this type of effects. However, I could establish clear associations between age, as well as other life course indicators, and values and attitudes related to the modernization process, which were overlooked by Inglehart. All in all, the evidence speaks in favor of the idea that values are much more open to change than expected. Factors that cause value change may be external to the individual, such as contextual forces, or internal, such as aging or developmental processes.

Another implication of this dissertation is the need to revise Inglehart's theory to face these facts, to adjust to these new evidences. My research uses the very same data Inglehart employed to reach to totally different conclusions about the stability of value systems. Still, the substantial aspects of Inglehart's theory are not questioned here; they can even become reinforced instead. In fact, the cultural modernization processes that Inglehart proclaims are taking place faster than he forecasts. The evidences presented here point the need to revise and adjust both Inglehart's individual modernity theory and value theory. These theories should get rid of preconceptions and flawed assumptions about the stability of values over the life span. In the end, this is just an empirical question, and facts speak in favor of within-cohort change. The dominant view in the field of values and political socialization is biased in favor of stability as well. However, prejudices must be set aside if we were to analyze facts objectively. Values and abstract or symbolic attitudes can change across the entire life course, and they actually do it sometimes as I have shown in this dissertation.

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Appendix

Table A1 Between & Within Cohort Changes in Importance of Religion across Countries.

	Raw changes				Adjusted changes			
	Between	**Bet_pre**	**Within**	**|Within|**	**Between**	**Bet_pre**	**Within**	**|Within|**
Australia	-0.57	-0.38	-0.19	0.19	-0.65	-0.78	-1.47	1.47
Austria	-0.69	-0.51	0.00	0.15	-0.78	-1.04	-0.01	0.01
Belgium	-0.68	-0.61	0.12	0.15	-0.76	-1.25	0.83	0.83
Canada	-0.56	-0.60	0.10	0.11	-0.63	-1.23	0.57	0.57
Czech Republic	-0.83	-0.64	-0.09	0.09	-0.93	-1.32	-0.57	0.57
Denmark	-0.86	-0.62	0.03	0.08	-0.97	-1.27	0.21	0.21
Finland	-0.75	-0.64	0.15	0.29	-0.84	-1.31	0.81	0.81
France	-0.74	-0.61	0.06	0.15	-0.83	-1.25	0.33	0.33
Germany	-0.81	-0.58	0.03	0.11	-0.91	-1.18	0.17	0.17
Great Britain	-0.74	-0.54	0.07	0.13	-0.83	-1.09	0.40	0.40
Hungary	-1.06	-0.78	-0.05	0.09	-1.19	-1.60	-0.33	0.33
Iceland	-0.73	-0.90	0.01	0.18	-0.82	-1.83	0.09	0.09
Ireland	-0.81	-0.89	-0.11	0.16	-0.91	-1.82	-0.71	0.71
Italy	-0.61	-0.52	0.53	0.53	-0.69	-1.07	2.93	2.93
Japan	-0.88	-0.77	0.06	0.11	-0.98	-1.56	0.32	0.32
Mexico	-0.18	-0.33	0.46	0.46	-0.20	-0.67	2.53	2.53
Netherlands	-0.64	-0.70	-0.28	0.28	-0.72	-1.43	-1.53	1.53
New Zealand	-0.62	-0.40	-0.09	0.09	-0.70	-0.81	-0.67	0.67
Norway	-0.74	-0.57	0.39	0.41	-0.83	-1.16	2.18	2.18
Poland	-0.42	-0.28	0.09	0.11	-0.47	-0.58	0.50	0.50
Portugal	-0.64	-0.50	0.42	0.42	-0.72	-1.02	2.83	2.83
Slovakia	-0.98	-0.74	0.22	0.22	-1.10	-1.51	1.47	1.47
South Korea	-0.56	-0.44	-0.06	0.26	-0.63	-0.90	-0.31	0.31
Spain	-0.91	-0.79	-0.02	0.06	-1.02	-1.62	-0.12	0.12
Sweden	-0.38	-0.64	0.19	0.19	-0.42	-1.30	1.05	1.05
Switzerland	-0.75	-0.63	-0.03	0.12	-0.84	-1.29	-0.17	0.17
Turkey	-0.46	-0.29	0.48	0.48	-0.52	-0.59	2.69	2.69
USA	-0.36	-0.23	-0.03	0.12	-0.41	-0.48	-0.16	0.16
Average	-0.68	-0.58	0.09	0.20	-0.76	-1.18	0.50	0.93
SD	0.20	0.18	0.21	0.14	0.22	0.36	1.22	0.92
Correlations								
Within	0.31	0.29			0.28	0.26		
|Within|	0.41	0.31			0.37	0.32		
Aggregated diff.	0.31	0.25	0.79	0.61	0.31	0.26	0.81	0.61
Diff. GDP head	-0.27	-0.33	-0.30	-0.18	-0.27	-0.33	-0.30	-0.23
Diff. HDI	0.26	0.20	0.27	0.50	0.26	0.20	0.26	0.35
Diff. Gini	0.24	0.35	0.24	0.18	0.24	0.35	0.24	0.20
Diff. PDI	0.16	-0.10	0.28	0.11	0.07	-0.22	0.26	0.19

The figures are differences in means of the variable 'Importance of Religion in Life' (range inverted: 4 'very important', 3 'rather important', 2 'not very important', and 1 'not at all important'). *Between*: Difference between the mean of the youngest generation (1980-89) and that of the oldest one (until 1939), averaged over the period of observations. *Bet_pre*: Difference between the mean of the youngest generation (1980-89) and the mean of the second oldest one (1940-49). *Within*: Average of the differences between the mean of each generation at the beginning of the period of observations and the mean at the latest time point. |*Within*|: Absolute value of *Within*.

Table A2 Estimates of Hierarchical Linear Models Predicting Importance of Religion in Life in 28 OECD Countries (Individuals within Countries).

		1) Empty model		**2) Individual level predictors:** Generations		**3) Individual level predictors:** Gen.-Waves		**4) Individual level predictors:** Gen.-Age		**5) Individual level predictors**		**6) Context-level predictors**		**7) Random slopes**		**8) Random slope & Cross-level inter.**	
Parameters		Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Estimates of fixed effects																	
	Intercept	2.55 ***	0.08	2.35 ***	0.09	2.26 ***	0.09	2.14 ***	0.09	2.28 ***	0.10	4.32 **	1,65	4,69	3,42	4,28 **	1,70
Level 1	Generation																
Individuals	Until 1939			0.75 ***	0.01	0.78 ***	0.01	0.39 ***	0.02	0.59 ***	0.02	0.59 ***	0,02	0,57 ***	0,02	0,59 ***	0,02
	1940-49			0.59 ***	0.01	0.61 ***	0.01	0.29 ***	0.02	0.47 ***	0.01	0.47 ***	0,01	0,45 ***	0,01	0,47 ***	0,01
	1950-59			0.43 ***	0.01	0.44 ***	0.01	0.19 ***	0.02	0.33 ***	0.01	0.33 ***	0,01	0,32 ***	0,01	0,33 ***	0,01
	1960-69			0.22 ***	0.01	0.23 ***	0.01	0.05 ***	0.01	0.15 ***	0.01	0.15 ***	0,01	0,15 ***	0,01	0,15 ***	0,01
	1970-79			0.10 ***	0.01	0.10 ***	0.01	0.00	0.01	0.05 ***	0.01	0.06 ***	0,01	0,05 ***	0,01	0,05 ***	0,01
	1980-89			(ref.)		(ref.)		(ref.)		(ref.)		(ref.)		(ref.)		(ref.)	
	Age							0.01 ***	0.00								
	Waves					0.02 ***	0.00			0.02 ***	0.01	0.02 ***	0,01	0,01	0,02	0,02 ***	0,01
	Male									-0.27 ***	0.01	-0.27 ***	0,01	-0,27 ***	0,02	-0,41 ***	0,08
	Married									0.11 ***	0.01	0.11 ***	0,01	0,11 ***	0,02	0,11 ***	0,01
	High education									0.00	0.01	0.00	0,01	0,00	0,03	0,48 ***	0,13
	Postmaterialist									-0.03 ***	0.01	-0.03 ***	0,01	-0,02 *	0,01	-0,03 ***	0,01
	Catholic									0.64 ***	0.01	0.64 ***	0,01	0,71 ***	0,05	0,64 ***	0,01
	Protestant									0.45 ***	0.01	0.46 ***	0,01	0,54 ***	0,07	0,46 ***	0,01
	Community size									-0.03 ***	0.00	-0.03 ***	0,00	-0,03 ***	0,01	-0,03 ***	0,00
Level 2	*Time averaged*																
Countries by waves	GDP per capita											0.00	0,00	0,00	0,00	0,00 *	0,00
	HDI											-5.20 **	2,16	-7,20	4,38	-5,32 **	2,22

	Gini coefficient																		5.07	***	1,13	6,32	**	2,30	5,25	***	1,17
	Protestant																		-0.02		0,14	0,35		0,29	-0,03		0,15
	Herfindahl index																		-0.36		0,28	-0,36		0,55	-0,42		0,29
	PDI postmat.																		0.00		0,00	0,00		0,01	0,00		0,00
Cross-level interaction	High edu. * Gini																								-1,56	***	0,42
	Male * Gini																								0,44	*	0,24
Estimates of covariance parameters																											
	Residual	0.93	***	0.00	0.88	***	0.00	0.88	***	0.00	0.87	***	0.00	0.79	***	0.00	0.79	***	0,00	0,77	***	0,00	0,79	***	0,00			
	Intercept	0.19	***	0.05	0.21	***	0.06	0.21	***	0.06	0.21	***	0.06	0.22	***	0.06	0.06	***	0,02	0,16	***	0,06	0,06	***	0,02			
	Waves																			0,01	***	0,00					
	Male																			0,00	***	0,00	0,00	**	0,00		
	Married																			0,01	***	0,00					
	High education																			0,02	***	0,01	0,01	***	0,01		
	Postmaterialist																			0,00	**	0,00					
	Catholic																			0,05	***	0,01					
	Protestant																			0,10	***	0,04					
	Community size																			0,00	***	0,00					
Intraclass correlation		17,3	%		19.3	%		19.3	%		19.5	%		21.9	%		6.6	%										
Number of parameters		3			8			9			9			16			22			30			26				
Model comparisons																											
Deviance		341,165.8			334,241.3			334,152.9			332,946.1			145,256.6			145,222.2			144,027.4			145,080.7			
χ^2 Model improvement (prev. model)					6924.5	***		88.4	***		1206.8	***		188896.3	***		34.4	***		1194.8	***		141.5	***		
AIC		341,171.8			334,257.3			334,170.9			332,964.1			145,288.6			145,266.2			144,087.4			145,132.7			

Significance: ***p<0.01; **p<0.05; *p<0.10.

Table A3 Estimates of Hierarchical Linear Models Predicting Importance of God in 28 OECD Countries (Individuals within Countries).

		1) Empty model		**2) Individual level predictors:** Generations		**3) Individual level predictors:** Gen.-Waves		**4) Individual level predictors:** Gen.-Age		**5) Individual level predictors**		**6) Context-level predictors**		**7) Random slopes**		**8) Random slope & Cross-level inter.**	
Parameters		Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Estimates of fixed effects																	
	Intercept	6.08 ***	0.28	5.50 ***	0.29	5.17 ***	0.29	4.47 ***	0.29	4.44 ***	0.32	10.88 **	5.01	19.04	11.64	11.46 **	5.32
Level 1	Generation																
Individuals	Until 1939			2.03 ***	0.03	2.15 ***	0.03	0.93 ***	0.06	1.57 ***	0.07	1.57 ***	0.07	1.46 ***	0.07	1.56 ***	0.07
	1940-49			1.61 ***	0.03	1.67 ***	0.03	0.65 ***	0.05	1.20 ***	0.04	1.20 ***	0.04	1.14 ***	0.04	1.20 ***	0.04
	1950-59			1.23 ***	0.02	1.26 ***	0.02	0.44 ***	0.04	0.91 ***	0.04	0.91 ***	0.04	0.88 ***	0.04	0.91 ***	0.04
	1960-69			0.59 ***	0.02	0.62 ***	0.02	0.04	0.03	0.45 ***	0.04	0.45 ***	0.04	0.44 ***	0.03	0.45 ***	0.03
	1970-79			0.18 ***	0.02	0.22 ***	0.02	-0.10 ***	0.03	0.20 ***	0.03	0.20 ***	0.03	0.20 ***	0.03	0.20 ***	0.03
	1980-89			(ref.)		(ref.)		(ref.)		(ref.)		(ref.)		(ref.)		(ref.)	
	Age							0.04 ***	0.00								
	Age²							0.00 ***	0.00								
	Waves					0.10 ***	0.01			0.22 ***	0.02	0.22 ***	0.02	0.16 *	0.08	0.21 ***	0.02
	Male									-0.83 ***	0.02	-0.83 ***	0.02	-0.84 ***	0.05	-1.61 ***	0.22
	Married									0.28 ***	0.02	0.28 ***	0.02	0.31 ***	0.06	0.29 ***	0.02
	High education									-0.10 ***	0.03	-0.10 ***	0.03	-0.14 *	0.07	0.61	0.37
	Postmaterialist									-0.14 ***	0.02	-0.14 ***	0.02	-0.13 ***	0.04	-0.14 ***	0.02
	Catholic									2.18 ***	0.03	2.18 ***	0.03	2.35 ***	0.19	2.18 ***	0.03
	Protestant									1.54 ***	0.04	1.54 ***	0.04	1.79 ***	0.25	1.55 ***	0.04
	Community size									-0.05 ***	0.01	-0.05 ***	0.01	-0.05 **	0.02	-0.05 ***	0.01
Level 2	*Country averaged*																
Countries by waves	GDP per capita											0.00 *	0.00	0.00 **	0.00	0.00	0.00
	HDI											-16.57 **	6.56	-32.51 **	14.92	-17.34 **	6.96

	Gini coefficient																	17.31	***	3.44	15.05	*	7.77	16.61	***	3.65
	Protestant																	-0.39		0.44	0.12		0.99	-0.43		0.47
	Herfindahl index																	-1.82	**	0.85	-2.08		1.85	-1.99	**	0.90
	PDI postmat.																	0.00		0.01	-0.02		0.03	0.00		0.01
Cross-level interaction	High edu. * Gini																							-2.41	*	1.19
	Male * Gini																							2.48	***	0.70
Estimates of covariance parameters																										
	Residual	8.29	***	0.03	7.87	***	0.03	7.85	***	0.03	7.85	***	0.03	7.04	***	0.04	7.04	***	0.04	6.76	***	0.04	7.01	***	0.04
	Intercept	2.14	***	0.57	2.29	***	0.61	2.27	***	0.61	2.27	***	0.61	2.35	***	0.67	0.51	***	0.15	1.85	***	0.64	0.58	***	0.17
	Waves																			0.11	***	0.04			
	Male																			0.06	***	0.02	0.03	**	0.01
	Married																			0.08	***	0.03			
	High education																			0.11	**	0.04	0.11	***	0.04
	Postmaterialist																			0.02	**	0.01			
	Catholic																			0.71	***	0.22			
	Protestant																			1.36	***	0.47			
	Community size																			0.01	***	0.00			
Intraclass correlation		20.5	%		22.5	%		22.4	%		22.4	%		25.0	%		6.8	%								
Number of parameters		3			8			9			8			16			22			30			26			
Model comparisons																										
Deviance		704481.6			697112.5			696834.2			670765.3			260304.4			260266.6			258471.5			260104.9		
χ^2 Model improvement (prev. model)					7369.0	***		278.3	***		26347.2	***		436808.1	***		37.8	***		1795.1	***		161.7	***	
AIC		704487.6			697128.5			696852.2			670785.3			260336.4			260310.6			258531.5			260156.9		

Significance: ***p<0.01; **p<0.05; *p<0.10.

Figure A1 Percent Distribution of Importance of God, by Wave and Country

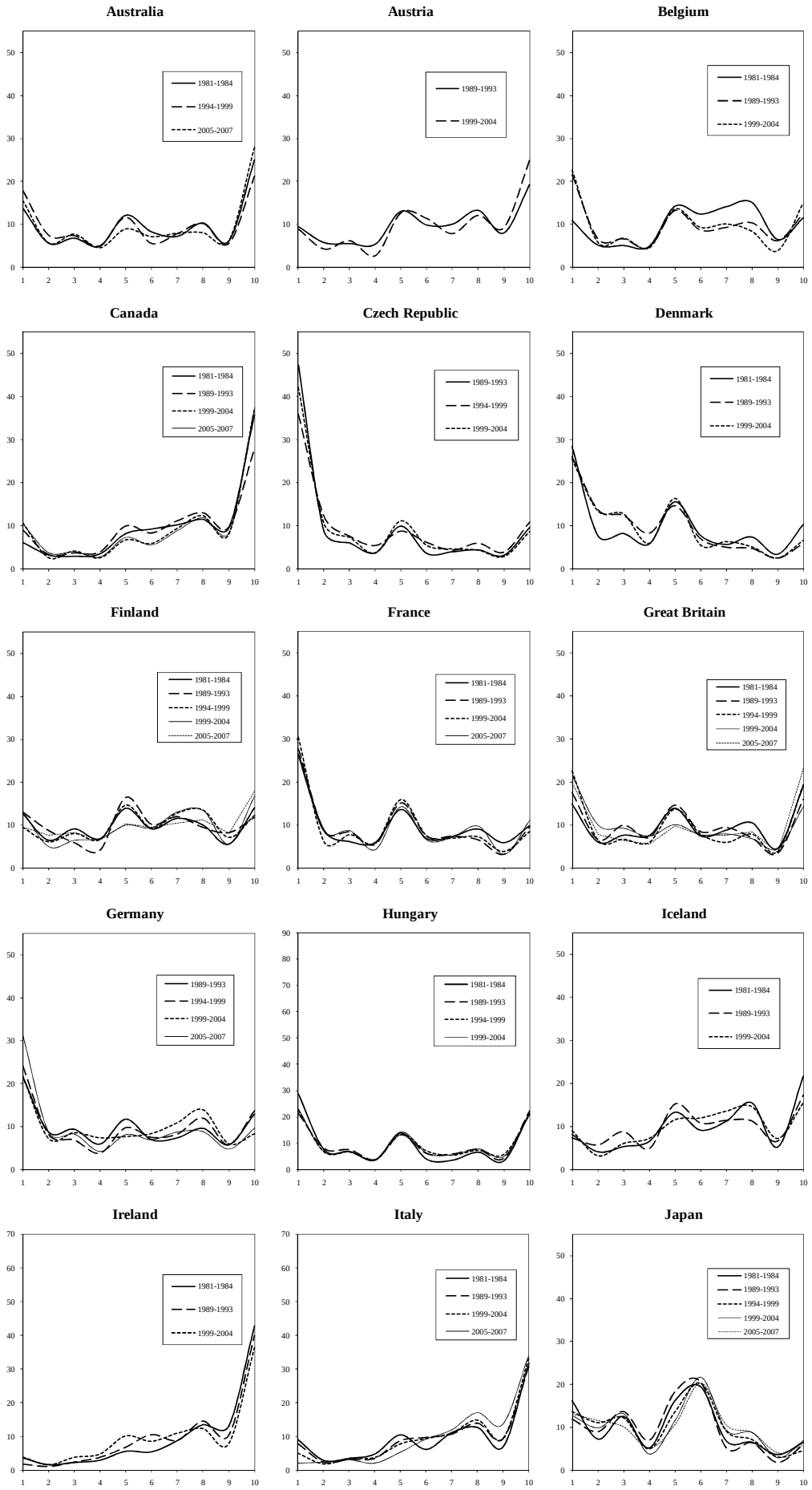

Figure A2 Percent Distribution of Importance of God, by Wave and Country

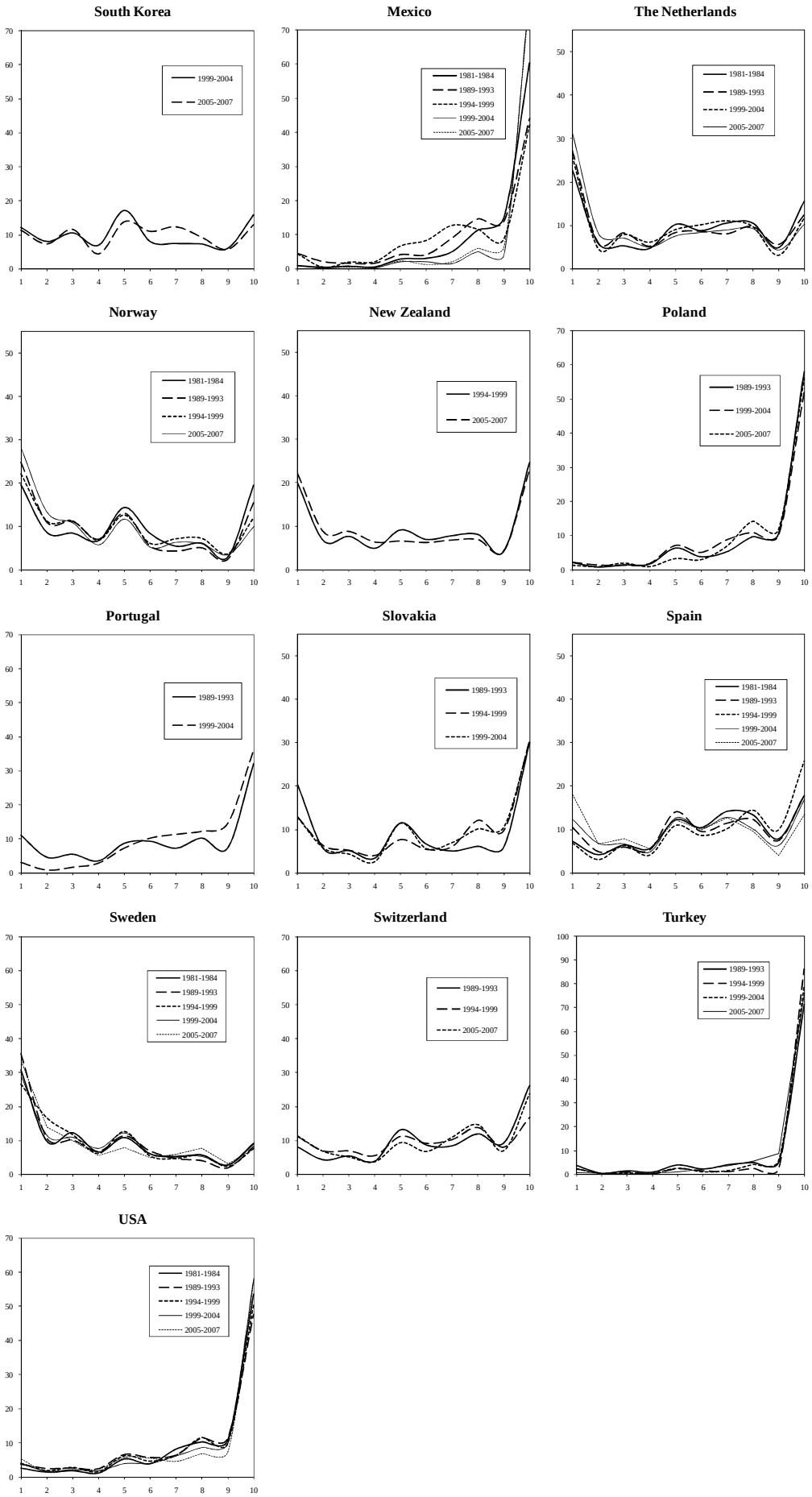

Figure A3 Percent Distribution of Tolerance of Homosexuality, by Wave and Country

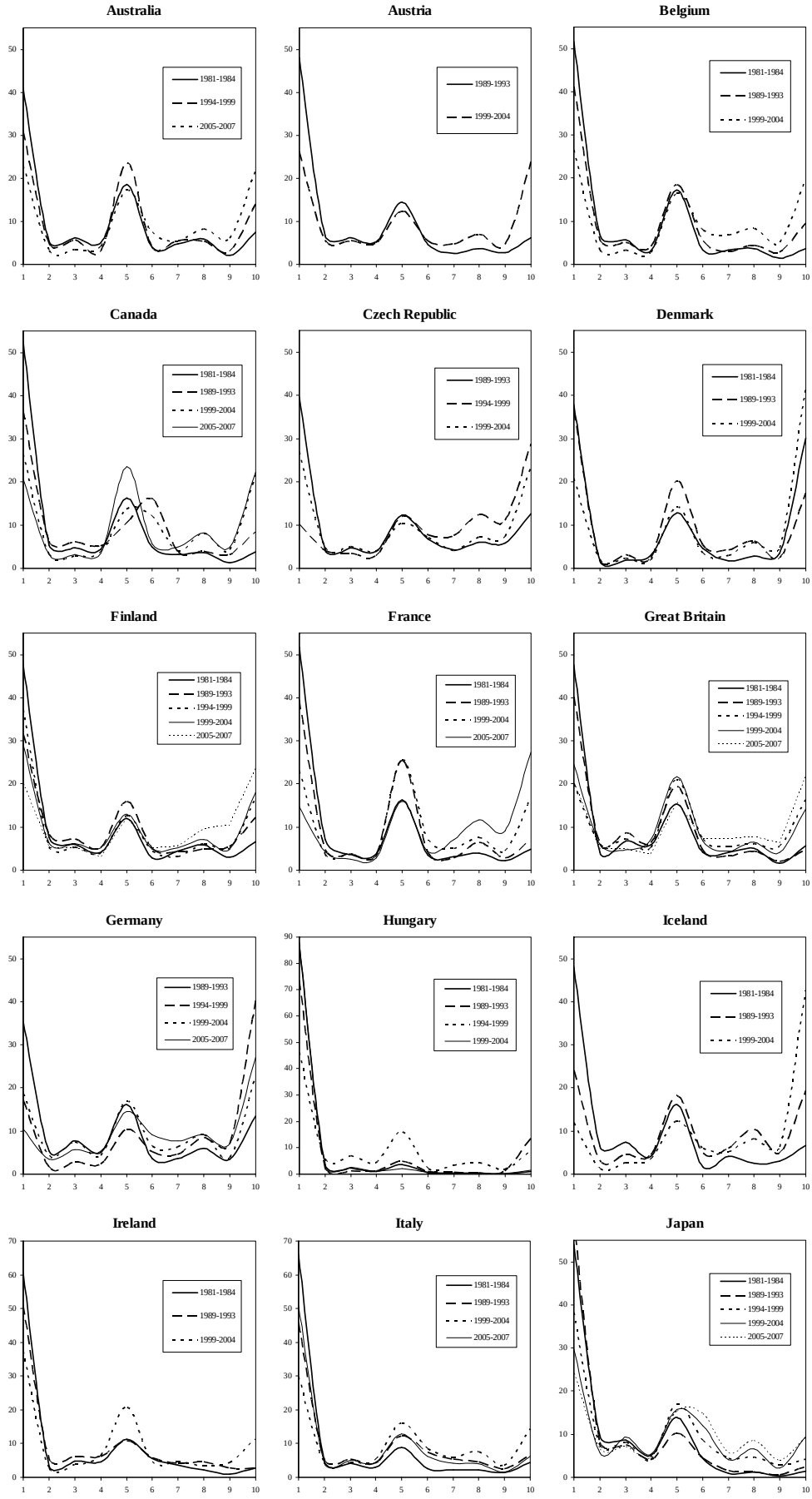

Figure A4 Percent Distribution of Tolerance of Homosexuality, by Wave and Country