

Justifiability of Euthanasia in OECD Countries: Patterns of Change and Age-Period-Cohort Analysis

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ABSTRACT

In this chapter, we study the justifiability of euthanasia from a comparative and longitudinal perspective, using EVS/WVS data from 30 OECD countries from 1981 to 2009. Accounts of attitudes toward euthanasia commonly have been longitudinal (Cohen et al. 2006a), comparative (Cohen et al. 2006b, 2014), or focused on individual-level explanations of single-country cases (e.g., van der Maas 1996; Kemmelmeier et al. 2002; Burdette, Hill and Moulton, 2005). This research contributes to this literature by combining these approaches within a single framework emphasizing the potential effects of age, period, and cohort on attitude changes.

We study age–period–cohort effects on the justifiability of euthanasia across nations. We first descriptively explore period changes, intercohort differences, and intracohort changes across countries and over time. Second, we concurrently model age, period, and cohort effects by applying two novel extensions of multilevel analysis: 1) the dynamic comparative multilevel approach (Fairbrother 2014; Tormos 2013) and 2) a comparative version of cross-classified random effects models (Hayward and Krause 2015).

Our main gain is to understand the nature of the changes that occurred over this period of time (1981–2009). We find a clear increase in tolerance of euthanasia across affluent countries. First, the change occurred between generations. This is in line with modernization theory, which holds that formative experiences shape the views of cohorts and that social change occurs progressively due to generational replacement (e.g., Inglehart and Welzel 2005). However, the degree of change that we observe in the data is unlikely to have come from cohort replacement processes alone. We identify clear trends related to linear period effects which are similar across countries when controlling for age and cohort effects. These trends might be connected to the overall processes of human development and emancipation (Inglehart and Welzel 2005; Welzel 2013). Aging, inversely, is demonstrated to have a negative effect on the justifiability of euthanasia. Our results point to the presence of cohort, age, and period effects that produce intracohort changes.

1. Introduction

The end of life is a highly sensitive topic for most people, and the way individuals face the end of life is closely linked to the deeply rooted values and beliefs of individuals themselves and the cultures in which they live. Beliefs and values affect not only how we face the end of life but also attitudes towards any human decision or manipulation of this process.

Modernization and postmodernization processes include the growth of personal autonomy and importance of individual choice (Inglehart 1997) and the decline of religiosity around the world (Hayward and Krause 2015). The leaders of these processes are the most advanced countries which have organized themselves into the Organisation for Economic Co-operation and Development (OECD). Along with modernization of values, individual moral views and societal norms are changing, and this has led to changes in law previously hard to imagine, such as the legal recognition of same-sex marriage and legalization of the non-medical use of marijuana. Euthanasia, or ending the life of incurably sick and unbearably suffering person by his or her direct request, has become a widely discussed topic in the most modernized countries. Despite high modernization levels, only a few OECD countries have adopted some forms of euthanasia legalization: Belgium and the Netherlands in 2002, Luxembourg in 2009, and several states in the United States of America. In most OECD countries, euthanasia remains illegal, and the topic itself is sometimes perceived as taboo.

Still, there has been a clear, systematic increase in the justifiability of euthanasia in affluent countries, especially during the past three decades (since 1980s by 2000s). At the same time, many advances and possibilities in healthcare technologies have had a clear positive impact on life expectancy and improved the quality of life for terminally ill persons. The increase in the level of justification might incite some changes in the institutional and legal systems of some countries (Cohen et al. 2012). Although euthanasia is still illegal in most countries, and no change in its formal legal status has appeared, there has been a relaxation of some sanctions which were often downgraded or rarely applied. The increase of approval, along with some shifts in practices and sanctions in the legal and institutional spheres, has resulted in an intensification of the debate on this issue in all spheres of society (Cohen et al. 2006).

Despite the key importance of the dynamics of euthanasia justifiability, most studies have focused on individual or national differences at one time point. Various predictors have been demonstrated to be significant, but almost no research has considered actual *changes* in attitudes. A rare exception is the work of Cohen et al. (2014), which demonstrates a great increase in the

justifiability of euthanasia in 12 European countries related to decrease in religiosity and increase of general permissiveness. Whereas Cohen et al. (2014) are interested in attitude change in general, recent developments in multilevel modelling have made the decomposition of dynamics possible (Tormos 2013; Fairbrother 2014; Yang and Land 2006, 2008). Dynamics can be split into three components—age, period, and cohort effects—which are related to very different processes and have different consequences.

The purpose of this chapter is to decompose these three components of positive dynamics and to identify their independent impacts on attitudes toward euthanasia. First, we analyze the effects of lifespan on attitudes toward euthanasia and whether the effects of life course-related factors, such as aging, increased feelings of vulnerability, and decreasing autonomy values have impacts on euthanasia attitudes. Second, we aim to test whether such attitudes are related to the experiences individuals acquire during primary socialization (cohort effect). The third component, period effects, is sometimes referred to as “zeitgeist” (Boehnke et al. 2007), which reflects the general reaction of people from all generations and ages to the current situation in, for instance, the healthcare system, in media coverage, etc. With this purpose in mind, we are interested in examining whether the effects of age, period, and cohort on the justification of euthanasia are significant and independent. An important outcome of this analysis is the answer to the question of whether individual moral attitudes toward euthanasia evolve across the lifespan or are stable and change only due to cohort effect.

2. Research Background and Hypotheses

There are many constructs related to euthanasia discussed in literature. It is important to state at the beginning that this chapter discusses the justifiability of euthanasia as it is expressed by the general (or “lay” as opposed to the expert) public. Acceptance, approval, and permissiveness of euthanasia are different concepts. The justifiability of euthanasia in relation to a third party is an expression of an individual’s tolerance or recognition of other persons’ moral right to euthanasia.

2.1. Factors of Individual and National Differences

As mentioned, the vast majority of studies have described individual and national differences in attitudes toward euthanasia rather than analyzing changes in attitudes. Still, these results are useful for formulating hypotheses regarding the three components of dynamics, so we begin by describing these factors. Most individual and national differences in the justifiability of

euthanasia were explained by four general predictors—religiosity, autonomy values, slippery-slope or vulnerability factors, and knowledge—and all kinds of interactions among these four predictors (Rudnev and Savelkaeva forthcoming; Verbakel and Jaspers 2010; Reijtens et al. 2014; Hendry et al. 2013).

The impact of religiosity at both individual and country levels has been demonstrated multiple times. At the individual level, most religions have a direct prohibition on any life interruption (Burdette, Hill & Moulton 1997). Religion might also have an indirect effect through lowering autonomy values (Rudnev and Savelkaeva forthcoming). At the country level, religiosity exerts influence through healthcare institutions (Andrew et al. 2013) and the formation of conservative moral views.

Autonomy values have a positive effect independent of the impact of religiosity on euthanasia justifiability (Rudnev and Savelkaeva forthcoming; Koneke 2014). Personal choice in every aspect of life can be expanded to decisions at the end of life. Personal views on the importance of personal dignity favor a higher level of justification. The concept of death with dignity also has its roots in the idea and value of autonomous choice (van der Graaf and van Delden 2009).

The slippery-slope hypothesis encompasses all the fears related to the implementation of euthanasia without the patient's request. In a broader sense, this hypothesis refers to all kinds of resources at the individual and country levels, including human (education, health, and abilities), social (trust and social relations), and financial capital (access to quality health care). The possession of these resources helps create confidence that euthanasia will not be abused. According to slippery-slope theory (Verbakel and Jaspers 2010), people in more vulnerable groups fear that euthanasia can be abused by unresponsive or inefficient healthcare systems. In such circumstances, individuals might feel vulnerable and tend to hold a reluctant attitude toward euthanasia.

Finally, knowledge can be considered a separate factor, although it is related to education (human capital). The general public gains knowledge mostly from media coverage, in addition to education, and greater coverage of euthanasia can create more knowledge of it and make the concept more familiar (Reijtens et al. 2014). Media coverage of specific cases of euthanasia provokes discussion and, as a result, approval of the very idea of the moral justifiability of euthanasia.

Returning to the dynamics of attitudes, we expect that differences in these four factors might influence differences between cohorts, life-cycle groups, and even between “the spirit of time” in different periods.

2.2. Age, Period, and Cohort Differences

Cohen et al. (2014) demonstrate a steady increase in positive views of the justifiability of euthanasia in 12 European countries (with the exception of West Germany). They relate this increase to the decreasing religiosity and increasing general permissiveness of societies. The authors also speculate about the possible impacts of media coverage of this topic. Going into the details, it is unclear which component of this unidirectional and very steady dynamic is responsible for the overall attitude change. For example, media coverage is more likely to be related to period effect, whereas religiosity is more likely to be associated with experiences during individuals’ formative years, so its effect is related to generational change. The distinction between period and cohort effects is important in predicting attitude change because period effect may change its magnitude or even be reversed, while the effect of primary socialization (cohort effect) is regarded as very stable and long-lasting. To clarify the impacts of period, cohort, and age on the justifiability of euthanasia, this chapter focuses on the decomposition of these three effects.

Cohort replacement is a key component of the process of attitude change and is well-described in the literature. According to modernization theory, a general value change occurs due to cohort (or generational) replacement or to a specific feature of the self to be more sensitive to experiences earlier than later in life (Inglehart 1990; Alwin and Krosnick 1991). The early experiences of a certain age group during the so-called formative years shape a generation. Members of the same generation share common values that remain more or less the same for the rest of their lives. More precisely, the generation maintains invariant values if there were no changes in the life cycle or period. However, keeping life cycle and period effects constant, or controlling for them, reveals the effect of generation, cohort, or early socialization, which we hereafter use as synonyms.

The younger cohorts in OECD countries spent their formative years in increasingly secure economic and healthcare conditions. Consequently, they formed more modernized values and share postmaterialist or self-expression values to a higher degree than earlier cohorts (Inglehart and Welzel 2005). Self-expression emphasizes personal choice and leads to more permissive moral attitudes. Any expansion of personal choice, given that there is no harm to others, is

perceived as positive. Given the increase in postmaterialist values in OECD countries and the fact that they differentiate people with different views of the justifiability of euthanasia (Koneke 2014; Rudnev and Savelkaeva forthcoming), we expect that the generational component of these dynamics has a steady, positive impact on euthanasia justifiability. In other words, younger generations justify euthanasia to a higher degree than older ones.

However, the degree of change that we observe in the data is unlikely to come from cohort replacement alone. Events experienced throughout the lifespan can also change persons' attitudes because the same exogenous factors responsible for intergenerational differences can also produce value differences within a generation (Tormos 2013). This gives rise to the obvious but less researched effect of period.

Period effects can be defined as changes in the attitudes of a population across time regardless of cohort and age (a stage of the life cycle). Here, we need to distinguish between individual and country period effects. Individual period effects take place within the life course of a single person and depend on the individual's life events regardless of age and generation. For example, the individual could undergo a traumatic experience, such as migration, which is known to change the basic values of a person (Bardi et al. 2014; Rudnev 2014). If events influencing attitudes are common to many individuals, a country period effect might occur; in other words, the common experiences of a group of people of different ages and different generations can form a country period effect. Younger and older people might have different reactions to the same events during a period. For instance, older people might oppose some innovations supported by younger ones. However, these differences relate to the interaction between age and period effects, not to the country period effect alone. We are interested in changes that have effects on the population as a whole. Therefore, we assume homogeneity of period effect across age and generation and hereafter discuss country period effects.

Period effects are somewhat contradictory in relation to modernization theory. Period effects assume attitude change, in addition to intergenerational change, whereas modernization theory focuses on the role of formative years (i.e., generation) in attitude formation. Period effects are related to cohort replacement; for example, the replacement of homophobic generations with more tolerant ones has created a different environment in various societies and made tolerance of homosexuals a general social norm for all generations and age groups. This effect is less self-evident in regard to euthanasia attitudes because this moral attitude has not become a norm yet and is much more complex. However, the processes of the legitimization and weakening of moral taboos are very alike in advanced societies. In addition, younger cohorts emphasize the values of

autonomy and personal choice, and it is reasonable to expect that the replacement of generations leads to a growing value of autonomy in the newer periods. As mentioned, the justifiability of euthanasia is clearly related to autonomy values, so we can hypothesize that more recent periods are associated with more positive attitudes toward euthanasia.¹

Media coverage of this topic is another source of period effects which is especially powerful at the moment. The high sensitivity of the topic attracts much attention and entices the media to exploit it, covering every controversial case in detail (e.g. Rietjens et al. 2013). Such waves of information make discussion more heated and more public, which can lead to either a decline or increase in support of the justification of euthanasia and, similarly, to either the polarization or emerging consensus in public views. The only unambiguous effect from growing media coverage of euthanasia is increasing knowledge of euthanasia among the general public. The knowledge does not have an unambiguous, positive effect on euthanasia justification, but when combined with the high-quality health care systems present in OECD countries, it might have only a positive impact on the justifiability of euthanasia.

In addition, almost all OECD countries have experienced population aging since the mid-twentieth century. Aging may increase awareness of and concerns about euthanasia at the country level because it becomes an issue for the whole society and knowledge about euthanasia could not be kept anymore among the elder groups. Again, the combination of knowledge and high-quality health care systems can change euthanasia attitudes only in a positive direction.

Considering all these arguments about period effects, it is easy to form the main hypothesis that period has a strong, positive effect on the justifiability of euthanasia.

The third component important to capture is age, or the stage of the life cycle related to physical and psychological maturation and aging. At the individual level, age is not an independent component of the dynamics of euthanasia justifiability, although it is necessary to control for age when trying to account for cohort and period effects. It has been demonstrated that attitudes do not become completely stable with aging after early adolescence, which suggests that age might have independent impact into attitudes (Krosnick and Alwin 1989; Alwin and Krosnick 1991). Although no studies have specifically disentangled the age effect on euthanasia attitudes (controlling for cohort and period), there is a general tendency of older people to follow known patterns, resist novel issues and practices, or, bluntly put, hold more conservative views. This tendency decreases their views of the justifiability of euthanasia.

¹ Tormos (2012, 2013) shows that values and attitudes related to modernization have undergone large changes not only between cohorts but within cohorts over time across OECD countries.

Another source of the decline in euthanasia justification with age is distance to death. The reality of facing the end of life is perceived differently by people of different ages. Younger people might perceive distance to death as large, so euthanasia does not appear close and real enough and their evaluations of its justifiability might be alienated and more related to their subjective values than to real situations. In contrast, older people more frequently experience health problems and see the end of life as a closer event, so their attitudes toward euthanasia are affected by different fears and enhanced importance of these issues. Following the slippery-slope argument, these fears lead to denial of the justifiability of euthanasia. The ideas of growing conservative values and reducing death distance, combined with aging, lead to the hypothesis that age has a negative effect on euthanasia justifiability.

Population aging as a country-level process creates a period effect opposite to hypothesized above: whereas we expect period effects to be positive, population aging might reduce this positive impact.

Overall, the hypotheses state that period has a positive effect on euthanasia justifiability; cohorts have also positive effect, in the sense that younger cohorts are more positive about it; and age has negative effect. These hypothesized effects are unidirectional and supported by previous findings regarding positive country-level trends (Cohen et al. 2014a) and differences between age groups in euthanasia justifiability (Verbakel and Jaspers 2010; Koneke 2014; Rudnev and Savelkaeva forthcoming).

These hypotheses were tested using a large-scale comparative dataset from OECD countries. In the following sections, we describe the data and modeling techniques for disentangling age, period, and cohort effects. We then present descriptive statistics on period changes, intercohort differences, and intracohort changes in euthanasia justifiability across the nations studied and extract common patterns. Next, we list the results of the dynamic and cross-classified multilevel models. In the conclusion, we discuss possible explanations for the results and suggest directions for future research.

3. Data and Method

3.1. Data and Measures

Analysis was conducted using combined World Values Survey and European Values Survey (EVS-WVS 1981–2014) data which included cross-sectional national surveys covering from 1981 to 2009. The longitudinal nature and large time period covered by the survey were

crucial features for decomposition of the dynamics into period and cohort effects. Data on 168,491 respondents were collected in 30 OECD countries. Chile, Estonia, Israel, and Slovenia are OECD members but were not included in the analysis due to the lack of data from them. Each country's population was surveyed from 2 to 7 times during this period. Data were weighted to compensate for sample deviations from population along multiple dimensions, as provided by EVS-WVS database (see Diez 2016). The studied countries were intentionally limited to OECD members because the topic of euthanasia is known in these societies at least to some degree. Research on moral evaluations of issues unknown by respondent lies outside the scope of this paper.

The justifiability of euthanasia was measured as a part of a large battery of questions in which respondents were asked to state for certain actions, including “euthanasia—ending of the life of the incurable sick,” “whether they think it can always be justified, never be justified, or something in between.” (WVS Questionnaire 2005).

3.2. Multilevel Approach to Modeling Age–Period–Cohort Effects

The problem of developing a model that can separately identify age, period, and cohort effects has been called unsolvable and a “futile quest” (see Glenn 2005; Bell and Jones 2013), and new approaches to the problem have been criticized harshly. The problem with such models is their empirical identifiability because each component is an exact product of the two other components. In other words, as in the equation

$$Age = Period + Cohort$$

has an indefinite number of solutions. From the statistical point of view, it cannot have any solution even when panel data are available, although substantive theories make very clear differentiations between the components. Various technical tricks have been developed to reformulate the statistical problem in terms of multicollinearity. All the solutions involve imposing some sort of constraint on the preceding equation. The best solution is to assume that if one of the three components is known, then the two others can be identified. However, this is rarely possible because it is hard to develop a strong *a priori* theory which can fix the parameters of age, period, or cohort. Since Mason et al. (1973), the most popular option has been to define the boundaries of cohorts and recode them as dummy variables, which solves the collinearity problem and sometimes fits a substantive theory well. The constraint in this approach is linked to the assumption that there is no cohort effect within researcher-defined cohort groups, and such effects can be observed only between cohorts, while within-cohort variability can be linked

exclusively to age and period effects. However, later simulation studies (see Glenn 2005) have demonstrated that this solution fails to yield correct estimates if there is a linear trend between two of the three components, for example, when both age and period have linear relations to a dependent variable. The introduction of multilevel age–period–cohort (APC) models changed the situation, and although the debate between developers and critics of this approach is still very heated (Reither et al. 2009, 2015; Bell and Jones 2014, 2015), APC models clearly show that this approach can work in many cases.

Accordingly, we propose two novel extensions of multilevel modeling that permit the study of age, period, and cohort effects using cross-sectional data from multiple countries and waves. The first extension can be labeled the dynamic comparative multilevel approach and was first developed independently by Fairbrother (2014) and Tormos (2013). The main purpose of this approach is to capture the effects of contextual factors that change over time (time varying) and to distinguish them from those that are stable (time invariant). In addition, this modeling strategy can eventually accommodate age–period–cohort analysis to concurrently estimate the effects of these three elements. In data from multiple observations of different countries, individuals (*i*) are naturally nested into countries and time periods (*tj*) as second-level units, which can be further nested within countries (*j*) as a third level. As shown in equation 1, age and cohort groups can be defined as first-level covariates, and period effects as a second-level covariate. Period is considered a country-level characteristic and can be indexed as *tj* because it is constant for individuals within given country-time observations and varies within countries and among time points²:

$$y_{itj} = \beta_0 + \beta_1 age_{itj} + \beta_2 cohort_{itj} + \beta_3 period_{tj} + v_j + u_{tj} + e_{itj} \quad (1)$$

Our second multilevel modelling strategy is to apply cross-classified random effects models (CCREM), as suggested by Yang and Land (2006, 2008), and to expand their scope to make them comparative. This requires nesting the cross-classification of individuals within cohorts and periods into a third level of country (see Hayward and Krause 2015). CCREM models have been frequently employed to study age–period–cohort effects in cross-sectional, single-country studies. Here, we propose extending their scope to analyze cross-sectional surveys

² Mishler and Rose (2007), in their study of the effects of age, period, and cohort in political attitudes in Russia with repeated cross-section surveys, used a multilevel model with two levels where age (centered) and cohort were individual level covariates, and period was a context level covariate. Our dynamic comparative multilevel model would imply an extension of these authors' approach for studying multiple countries.

covering multiple waves and countries. Equation 2 represents such a model using age as a first-level covariate.

$$y_{i(t|c)j} = \beta_0 + \beta_1 age_{i(t|c)j} + w_j + v_{cj} + u_{tj} + e_{i(t|c)j} \quad (2)$$

We have individuals nested within the cross-classification of cohorts and period units. Both cohorts and period units have the same hierarchical status and are, in turn, nested within countries. In CCCREM, cohorts and periods are no longer on the fixed but the random side of the equation. Therefore, a feature of these models is that they provide the variance components of the country–cohorts and country–time units, in addition to those of countries at the third level. This modeling strategy allows for variation in generation and period effects across countries.

In the different analyses presented here, we use a variety of indicators of age, period, and cohort. Age is operationalized both as simple age in years and as centered within each cohort. Period is measured as either as the year in which the survey was administered or as waves (grouping surveys from various survey years). The heterogeneity of the countries studied made it difficult to agree on theoretical grounds to define birth-year intervals. Therefore, we use a variety of cohort variables with different cohort intervals and test whether the results of these analyses varied. The first cohort variable groups respondents into seven groups and has two versions. The first version has equal intervals (except for marginal cohorts): before 1930, 1930–1939, 1940–1949, 1950–1959, 1960–1969, 1970–1979, and since 1979. The second version has unequal intervals: before 1931, 1931–1938, 1939–1944, 1945–1960, 1961–1965, 1966–1975, and since 1975. A final cohort variable, used when small N per country-cohort is an issue in intracohort analysis, groups respondents into five categories: before 1940, 1940–1949, 1950–1959, 1960–1969, and since 1969.

4. Results

4.1. Descriptive Statistics: Justification of Euthanasia Across Countries Over Time

Based on the most recent observation for each country (figure 1), the average justification is 5.25, close to the mid-point of the scale (5.5). There are considerable differences in levels of the justification of euthanasia across OECD countries. Sixty-three percent of nations (19 of 30) are within 1 standard deviation higher or lower the mean. The countries with the highest levels of justification are Denmark (6.79), Belgium (6.76), France (6.75), the Netherlands (6.77), and

Australia (6.57). Those with the lowest levels are Turkey (2.21), Poland (3.37), Greece (3.37), Ireland (3.86), and Mexico (4.26).

<Fig. 1 about here>

4.1.1. Period Change

Table 1 illustrates the evolution of the justification of euthanasia across the 30 OECD countries over a 28-year period of time (1981–2009).

<Table 1 about here>

This table shows the change from the first to the most recent observation for each nation. In 25 of 30 countries, there has been an increase in justification, and in all of these countries, the increase is statistically significant. The overall average of the most recent observation (5.26) is higher than the first observation (4.08, not shown), a significant increase of 1.18. At the beginning of the 1980s, the average level of justification across countries was visibly lower than the center of the scale, but by the end of the first decade of the 2000s, it had risen to nearly the theoretical center of the scale (5.5), indicating more generalized acceptance. Although nearly all countries studied show positive change over time, the consistent growth of positive evaluations of euthanasia justifiability might be limited to Western Europe.³

In Belgium, Spain, Norway, Sweden, and France, the justification of euthanasia has risen the most, by more than 2 points on a 10-point scale on average and more than 3 points in Belgium. The increase has been less dramatic in Luxembourg, Mexico, Germany, Denmark, and Austria. Some nations, such as Denmark and the Netherlands, had initially high levels of justification but still demonstrated growth in the justifiability of euthanasia over the period observed. To capture the potential relationship between the degree of change and the point of departure, we construct a time-series regression with a simple linear trend within each country. Then, we calculate the correlation between the intercepts and the slopes of these regressions using the 30 nations as the unit of analysis. A negative correlation of -0.46 indicates that countries starting from lower levels of justification tend to have larger rates of change. This finding is logical because we observed

³ Both American and Eastern European countries show some backward trends in later surveys (see Table 2 and the following discussion).

nations at different stages of development during a limited range of time. In all likelihood, the most developed countries had already experienced the most dramatic increases before we started to observe them with the EVS-WVS instrument. The average increase across countries is 0.31 (mean slope), and the average point of departure is 3.97 (mean intercept).

4.1.2. Intercohort differences

Are there cohort differences in the justification of euthanasia within countries? Are these differences similar across nations? The descriptive analysis indicates that there are indeed differences between cohorts in all countries and that the youngest cohorts tend to justify euthanasia more than the older. However, the magnitude of the difference varies from country to country. Figure 2 displays the difference between the youngest and the oldest cohort in each nation over the period observed. The average cohort gap is 1.76. Fourteen countries are above this threshold. The nation with the largest generational gap is Spain (3.68). Other countries with large cohort gaps are Norway (2.88), Ireland (2.57), and Belgium (2.55). The nations with the smallest differences between the youngest and oldest generations are South Korea (0.22), Turkey (0.35), and New Zealand (0.44).

<Fig. 2 about here>

This summary does not capture all variations in cohort patterns across nations. Figures A1 and A2 in the appendix present the comprehensive cohort patterns for each country. A detailed analysis of these figures indicates that some countries have linear monotonic cohort differences, and in all these cases, the younger the cohort is, the higher the level of justification of euthanasia is. Other countries have a curvilinear or non-monotonic pattern. In this group of nations, the younger cohorts are a little less tolerant than the immediately preceding ones. To illustrate this point, figure 3 presents the representative cases of Ireland and Switzerland, which have clear linear and curvilinear patterns, respectively.

<Fig. 3 about here>

In table 2, we calculate two types of functional forms to describe the distribution of cohorts in each country: first, a linear trend fitting a simple monotonic generational pattern, and

second, a trend with a curvilinear shape. The last column of table 2 indicates the differences between the R^2 of the each pair of models. The countries in table 2 are ordered according to the difference in R^2 . In the countries at the top of the table, the quadratic term does not add any relevant improvement. This means that the cohort pattern in these nations is better explained by a simple linear trend. The countries with clear linear cohort patterns are Ireland, Austria, Italy, Spain, and the Czech Republic. At the other end of the distribution are countries with clear curvilinear patterns, such as Switzerland, the Netherlands, Hungary, France, and Canada. The correlations between the linear intercept and the R^2 difference (at the bottom of table 2) indicate that nations in which older generations have a higher level of justification of euthanasia tend to better fit a curvilinear pattern, and vice versa. Conversely, countries, such as Spain or Ireland, where older cohorts have lower levels of justification tend to better fit a linear monotonic pattern. In general, nations where older cohorts have lower levels of justification tend to have larger cohort differences (see the correlation between the linear intercept and slope) and more linear cohort differences (see the correlation between the linear slope and R^2 difference).

<Table 2 about here>

4.1.3. *Intracohort Change*

Can we observe signs of intracohort change in the justification of euthanasia? If we take the 7 cohort groups and plot their trajectory over the period of observations for all 30 countries (figure 4), it is possible to spot intracohort trends. Each cohort changes considerably over time in the direction of increasingly justifying euthanasia. This change could be a product of aging, period effects, or a combination of both.

<Fig. 4 about here>

Using the same cohort classification, we calculate the change in each generation over every year observed for each country. Figure 5 shows the mean intracohort change calculated by averaging the intracohort change in each cohort in each nation. The mean intracohort change across all cohorts and countries is 0.73. In 24 of 30 nations, there are positive intracohort changes. The countries with highest changes are Belgium (2.67), Norway (2.10), Spain (2.07), and France (1.63).

<Fig. 5 about here>

In the final step, we perform latent growth curve analysis of cohort trajectories over time. We use reduced cohort and period groupings (5 and 6, respectively), yielding 150 cohort units over 6 moments of time and across 30 countries. We pool these cohorts together and take them as units of analysis. Table 3 summarizes the results of the model. The predicted intercept and slope are significant but not the correlation between them. The absence of a correlation between the intercept and the slope means that all cohorts evolve similarly, irrespective of their starting point. Older cohorts tend to start from lower levels of justification, due to differences in socialization during the formative years with respect to younger cohorts. However all of them seem to have changed substantially and in a similar way over time. The predicted value for the justification of euthanasia in the first observation is 4.315, and the predicted intracohort change is 0.248. This yields a predicted value of 5.307 for the most recent observation in the series. The global fit of the model falls short of what is desirable. Therefore, the coefficients presented here should be treated with caution.

<Table 3 about here>

4.2.4. *Correlations Among Types of Change*

To complete this descriptive section, we relate the overall period changes to intercohort differences and intracohort change. Table 4 presents the bivariate correlations among these three raw indicators in the whole sample of countries (see table A3 in the appendix for detailed information for each country). The overall period change is calculated by subtracting the estimate of the most recent observation from the first one for each country. Intercohort differences are obtained by subtracting the average of the youngest cohort from the oldest cohort in each nation. Intracohort change was determined by subtracting the most recent observation from the first one in each country. There is a positive correlation of 0.84 between overall period change and intercohort differences, indicating that countries with higher increases in the justification of euthanasia over time tend to have high intercohort differences. Here, overall period change includes both period and cohort replacement effects; therefore, the correlation might be partly due to cohort succession. A similar figure is obtained for the correlation of intracohort and period

changes (0.82): nations with larger period changes also have larger intracohort changes. Finally, the correlation between intra- and intercohort differences is less intense (0.65) but still relevant: countries with intracohort changes tend to have stronger cohort differences. In summary, the process of change in the justification of euthanasia seems to be taking place in these three different dimensions. Therefore, attitudes toward euthanasia change through gradual cohort replacement effects linked to intercohort differences in socialization and through the self-actualization of beliefs related to intracohort changes (whether a product of aging, period effects, or a combination).

<Table 4 about here>

4.2. Age–Period–Cohort Analysis

In this section, we focus on searching for the underlying age–period–cohort patterns in the data. Table 5 presents our two main strategies. The first uses 3-level dynamic comparative multilevel models. In model 1, age in years is introduced as fixed effects at the individual level, along with the 7 roughly equal interval cohort groups. At the second level of country-years, years are included as linear fixed effects. At the third level of country, no covariates are introduced. Cohort effects appear to be small: less than half a unit exists between each cohort and the oldest one (used as reference category), and the levels of justification of two cohorts (the second oldest and the youngest) cannot be considered different from the oldest one. The strong cohort differences observed in the descriptive analysis might have partly hid the underlying age effects, given that we did not control for the latter. However, we are aware of the high collinearity between age in years and the cohort variable in the dataset (0.861 correlation). Therefore, this model's moderate cohort effects might be a result of that collinearity.

To deal with this problem, we use within-cohort age (age centered) in model 2 instead. This new variable, obtained by centering age within each cohort, is orthogonal to cohort, so collinearity is avoided. In model 2, cohort effects greatly resemble what we have seen in the descriptive analysis. There are strong cohort differences that point to a curvilinear cohort pattern. Using the oldest generation as the reference category, each new generation justifies euthanasia more than the previous one until we reach the two youngest cohorts. The cohort of the 1970s has a similar coefficient to that of the 1960s, and the youngest cohort does not seem to justify euthanasia more than its immediate predecessor.

Age effects appear to be significant and negative. The older individuals are, irrespective of the cohort and period, the less they justify euthanasia. Each additional year of age reduces justification by 0.024. Conversely, period effects are positive and significant. In each successive year, the average country levels of justification of euthanasia increase linearly by 0.058, even when controlling for cohort and age effects. Taking into account the whole range of variation, this yields a total increase of 1.624 on the 10-point scale of justifiability from 1981 to 2009.

Including only age, period, and cohort variables as fixed effects in models 1–3 reduces deviance with respect to the empty model by 22,776.7, or 2.7%. In dynamic, comparative multilevel models, contextual variance is decomposed to its country and country-time components. In the empty model (not shown in tables), variance is larger at the country level (ICC: 8.8%) than at the country-year level (ICC: 5.4%). Including years as a covariate at the country-year level reduces ICC to 2.3%.

Model 3 is employed as a robustness check of the previous findings. It tests the potential effects of using unequal cohort intervals. All estimates of the model remain at similar levels with respect to model 2. The curvilinear cohort pattern, the negative effects of age, and the positive effects of survey year are still observed. In sum, the presence, shape, and intensity of the effects of age, period, and cohort fulfill the robustness check for the strategy of dynamic comparative multilevel modeling.

The second multilevel strategy presented in table 5—comparative cross-classified random effects models—is another type of robustness check. Model 4 includes age in years as a fixed effect at the individual level. The effect is the same as in dynamic comparative multilevel modeling. Looking at the ICC for the country-cohorts of the empty model (3.5%) and comparing it to their equivalent in model 4 (0.7%), it can be seen that assigning cohorts to the random side of the model does not solve the issue of collinearity between age and cohort. When age centered instead of age in years is included (model 5), the ICC of country-cohort increases to 2.5%. Figure 6 and 7 present the estimates for model 5 of the cohort and period random effects averaged across all countries. Cohort effects follow the same curvilinear pattern as in the dynamic comparative multilevel approach (model 2), and period effects also point to a trend of increase. Model 6 employs cohorts with unequal intervals, again leading to consistent results.

<Figures 6 and 7 about here>

The different tests presented here point to the robustness of the findings based on the presence of 1) curvilinear cohort effects across countries on average, 2) negative age effects, and 3) clear, positive period effects. The added value of multilevel analysis is the ability to concurrently model age, period, and cohort effects, thereby approaching the *ceteris paribus* condition (to the extent possible without experimental data). A natural limitation of the analysis performed here is the incomplete age range in each cohort that we could observe. This issue is more problematic for the youngest and oldest cohorts than the rest of cohorts.

5. Conclusion

As observed in this chapter, empirical tests show a clear pattern of change in the justification of euthanasia in OECD countries. In particular, we focus on analyzing and comparing the effects of age, period, and cohort in these nations through the application of different strategies. From these tests, several relevant conclusions can be drawn. First, the consistency of the results after testing and comparing strategies through the use of dynamic comparative multilevel approach and the cross-classified multilevel approach point to similar patterns of attitude change in OECD countries.

In general terms, the hypotheses anticipate positive period and cohort effects and negative age effects on attitudes toward euthanasia. The results confirm the hypotheses. We observe a clear increase in tolerance of euthanasia across affluent countries, with highly visible changes across generations. Our analyses show that, with some differences, there are indeed significant generation effects in all countries: younger generations have a greater tendency to justify euthanasia than older generations. We can also confirm clear intracohort changes in the justification of euthanasia, with levels of justification increasing over time.

This change is accompanied by clear trends in linear period effect across countries, showing rising levels of justification in 25 of 30 countries. This finding is consistent with the hypothesis of emancipation and human development. Also consistently with our hypothesis, age has a negative effect on justification due to the increasing proximity of death and greater sense of vulnerability as people age.

Different intercohort trends are observed in various countries. Most nations follow a clear linear pattern, in which younger generations have higher levels of justification than older ones. In some cases, this trend follows a curvilinear pattern, in which the second youngest generation

has the highest level of euthanasia justification. This finding is extremely interesting and could be related to a ceiling effect indicating that, in the future, the linear trends of some countries will tend to become curvilinear. This also suggests that the second-youngest generation, not the youngest, experienced the strongest modernizing shift.

If we focus on differences across countries, we can also conclude that the intensity of change in justification of euthanasia is unequal due to the different stages of modernization in countries. The change appears to have been more intense in countries with initially low levels of justification than in countries with initially high levels of justification.

It is also relevant to note that these countries with greater increases in justification of euthanasia over time also tend to have higher intercohort differences and intracohort changes. As well, countries with intense intracohort changes tend to undergo intense intercohort change. A relevant conclusion from these analyses, therefore, is that attitudes toward euthanasia evolve through a gradual generational replacement in both intercohort changes and the self-actualization of beliefs.

Further directions for research on this topic include deepening analysis of the differences between inter- and intracohort dynamics and attempting to explain the mechanisms of intracohort changes and how the self-actualization of beliefs influences the evolution of attitudes toward euthanasia in these countries. Additionally, more research on the effects of specific variables at the country level is a relevant line of study, particularly analyzing the impacts of policies and media coverage on changes related to age, period, and cohort.

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Table 1. Evolution of the justification of euthanasia across 30 OECD countries, 1981-2009.

	1981	1982	1984	1989	1990	1991	1995	1996	1997	1998	1999	2000	2001	2004	2005	2006	2007	2008	2009	Diff. [†]	Slope	Intercept ^{††}		
Belgium	3.53				5.08						5.97								6.76	3.23 *	1.06	2.69		
Spain	3.11				4.10		5.06				4.73	5.19					5.62	6.08		2.97 *	0.43	3.12		
Norway		2.77			4.24			5.30									5.58	5.62		2.85 *	0.70	2.59		
Sweden		4.48			5.04			6.79			6.07					6.72			6.54	2.06 *	0.42	4.48		
France	4.72				5.18						6.16					6.78		6.75		2.03 *	0.57	4.22		
Hungary		2.65				4.61			6.17	3.83								4.45	4.60	1.95 *	0.20	3.69		
Japan	4.70				5.31		5.96					6.43			6.47					1.77 *	0.47	4.38		
Ireland	2.12				2.57						3.23							3.86		1.74 *	0.59	1.48		
Iceland			4.14		4.68						5.33								5.78	1.64 *	0.56	3.59		
Italy	3.04				3.63						3.86				3.91				4.53	1.49 *	0.33	2.82		
Portugal					3.33						3.50							4.71		1.38 *	0.69	2.47		
Australia	5.21						6.18								6.57					1.36 *	0.68	4.63		
Czech Rep.						3.98			6.12	5.50								5.33		1.35 *	0.34	4.38		
USA		3.65			4.16		4.67				5.09					4.90				1.25 *	0.34	3.47		
Finland	4.66				6.16			6.04				5.40			5.82				5.91	1.25 *	0.13	5.21		
Netherlands	5.42				5.90						6.68					6.33		6.67		1.25 *	0.29	5.32		
UK	4.43				4.73						4.99				6.07				5.64	1.21 *	0.38	4.04		
Canada		4.15			4.98							5.74				5.34				1.19 *	0.43	3.97		
Slovakia						3.43			5.20	4.96								4.43		1.00 *	0.28	3.82		
Poland				2.40	2.14				2.93		3.37				3.36			3.37		0.97 *	0.26	2.03		
Austria					3.69						4.37							4.51		0.82 *	0.41	3.37		
Denmark	6.06				5.63						6.61							6.79		0.73 *	0.32	5.48		
Germany					4.09						4.34					4.91		4.81		0.72 *	0.27	3.86		
Mexico	3.66				4.19		3.65	3.52				3.33			4.26					0.60 *	0.01	3.74		
Luxembourg										5.63								6.09		0.46 *	0.46	5.17		
S. Korea			4.73					4.30					4.56		4.66					-0.07	0.01	4.55		
Switzerland				5.19				6.36									6.58	5.05		-0.14	-0.02	5.85		
New Zealand									6.38					6.19						-0.19	-0.19	6.57		
Turkey					2.96								2.78				2.77		2.21	-0.75 *	-0.23	3.25		
Greece											4.20							3.37		-0.83 *	-0.83	5.03		
Average	4.22	3.54	4.44	3.80	4.37	4.01	5.10	5.39	2.93	5.97	4.92	5.22	3.67	6.19	5.14	5.83	5.14	5.12	5.25	1.18	0.31	3.97		
SD	1.14	0.81	0.42	1.97	1.07	0.59	1.02	1.27		0.52	1.07	1.16	1.26		1.24	0.88	1.64	1.13	1.46	0.98	0.35	1.16		
Pearson correlation																								
Intercept*Slope	-0.46 *																							

[†] Diff. is the difference between the first and the last available time points. The average and SD at the end of the column is calculated using country differences.

^{††} Slope and intercept coefficients are calculated using mean scores in each country as unit of analysis in a regression model with a time trend that includes observations in a consecutive fashion from 1 to a maximum of 7. Therefore, no significance levels are reported.

Significance: * p<0.05; T-test for the comparison of averages (two-tailed), and Pearson r.

Source: EVS-WVS data, pooled 1981-2009.

Fig. 1. Justification of euthanasia in each country's last observation (2004-2009).

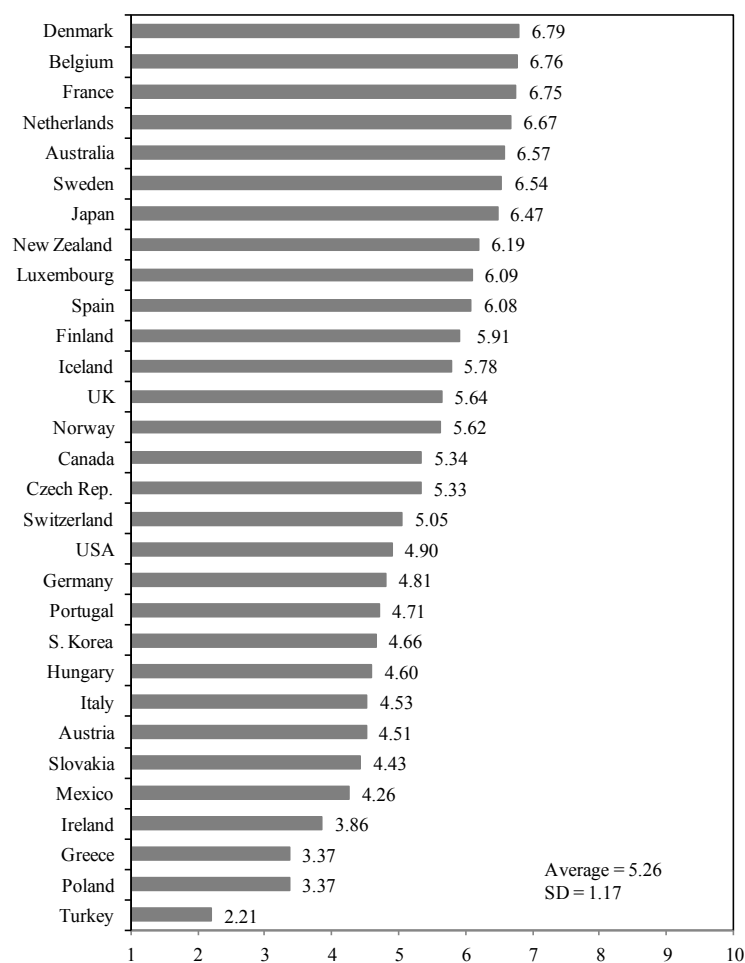


Fig. 2. Generational differences (difference between those born in 1980 and after, and those born until 1930).

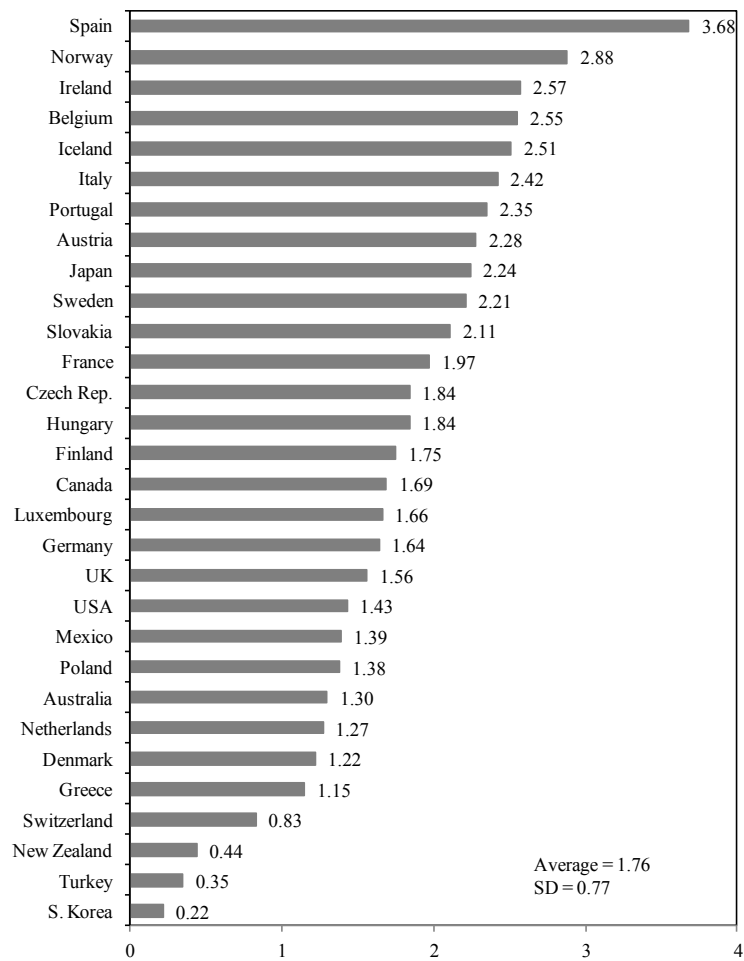


Fig. 3. Illustration of linear (Austria) and curvilinear (Switzerland) cohort patterns.

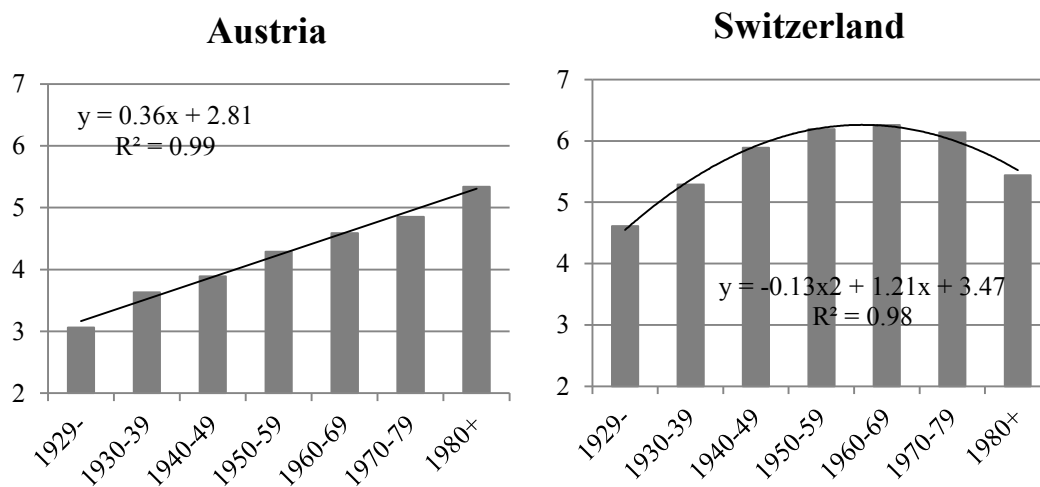


Table 2. Linear and curvilinear regression models to describe cohort patterns in justification of euthanasia.

	Linear models			Curvilinear models				Diff. R ²
	Slope	Intercept	R ²	Quadratic	Slope	Intercept	R ²	
Ireland	0.44	1.28	0.97	-0.01	0.48	1.22	0.97	0.00
Austria	0.36	2.81	0.99	-0.01	0.41	2.72	0.99	0.00
Italy	0.39	2.38	0.98	-0.01	0.49	2.24	0.98	0.00
Spain	0.62	2.33	0.99	-0.02	0.80	2.05	0.99	0.00
Czech Rep.	0.35	3.72	0.95	-0.02	0.48	3.52	0.96	0.01
Iceland	0.45	3.17	0.97	-0.03	0.65	2.87	0.98	0.01
Poland	0.27	1.97	0.93	-0.02	0.40	1.77	0.94	0.01
Portugal	0.36	2.39	0.96	-0.03	0.56	2.08	0.98	0.01
Mexico	0.23	2.82	0.93	0.02	0.06	3.06	0.95	0.02
Sweden	0.37	4.55	0.97	-0.03	0.63	4.14	0.99	0.02
Japan	0.40	4.34	0.97	-0.04	0.70	3.89	0.99	0.03
Slovakia	0.34	3.10	0.95	-0.04	0.63	2.66	0.99	0.03
Norway	0.46	2.95	0.94	-0.05	0.87	2.33	0.97	0.04
Turkey	0.08	2.17	0.69	0.01	-0.01	2.30	0.73	0.04
Luxembourg	0.29	4.56	0.89	-0.04	0.59	4.11	0.94	0.04
Belgium	0.37	4.12	0.91	-0.05	0.81	3.46	0.97	0.06
Greece	0.26	2.41	0.75	-0.05	0.63	1.85	0.82	0.07
USA	0.25	3.46	0.90	-0.04	0.59	2.95	0.98	0.08
Germany	0.26	3.49	0.88	-0.04	0.61	2.96	0.96	0.08
Finland	0.33	4.40	0.87	-0.06	0.85	3.64	0.96	0.10
Denmark	0.25	5.36	0.77	-0.07	0.78	4.57	0.94	0.17
S. Korea	0.17	3.78	0.38	0.07	-0.37	4.59	0.57	0.19
UK	0.26	4.16	0.80	-0.07	0.86	3.26	0.99	0.19
New Zealand	0.11	5.81	0.55	-0.04	0.42	5.35	0.75	0.20
Australia	0.23	5.14	0.74	-0.07	0.78	4.30	0.94	0.21
Canada	0.28	4.01	0.78	-0.09	0.96	2.99	1.00	0.21
France	0.23	4.89	0.72	-0.09	0.98	3.84	0.93	0.21
Hungary	0.28	3.31	0.64	-0.11	1.15	2.01	0.93	0.29
Netherlands	0.23	5.27	0.48	-0.13	1.26	3.72	0.97	0.49
Switzerland	0.16	5.04	0.34	-0.13	1.21	3.47	0.98	0.65
Average	0.30	3.64	0.82	-0.04	0.64	3.13	0.94	
SD	0.11	1.16	0.18	0.04	0.34	0.98	0.10	
<i>Pearson correlations</i>								
Intercept * slope (linear)			-0.41 *					
Intercept linear * R ² difference			0.59 *					
Slope linear * R ² difference			-0.51 *					

Note: Coefficients in the table are calculated using mean scores per cohort in each country as unit of analysis, the time trend that includes observations in a consecutive fashion from 1 to a maximum of 7. Therefore, none of them are significant under conventional levels.

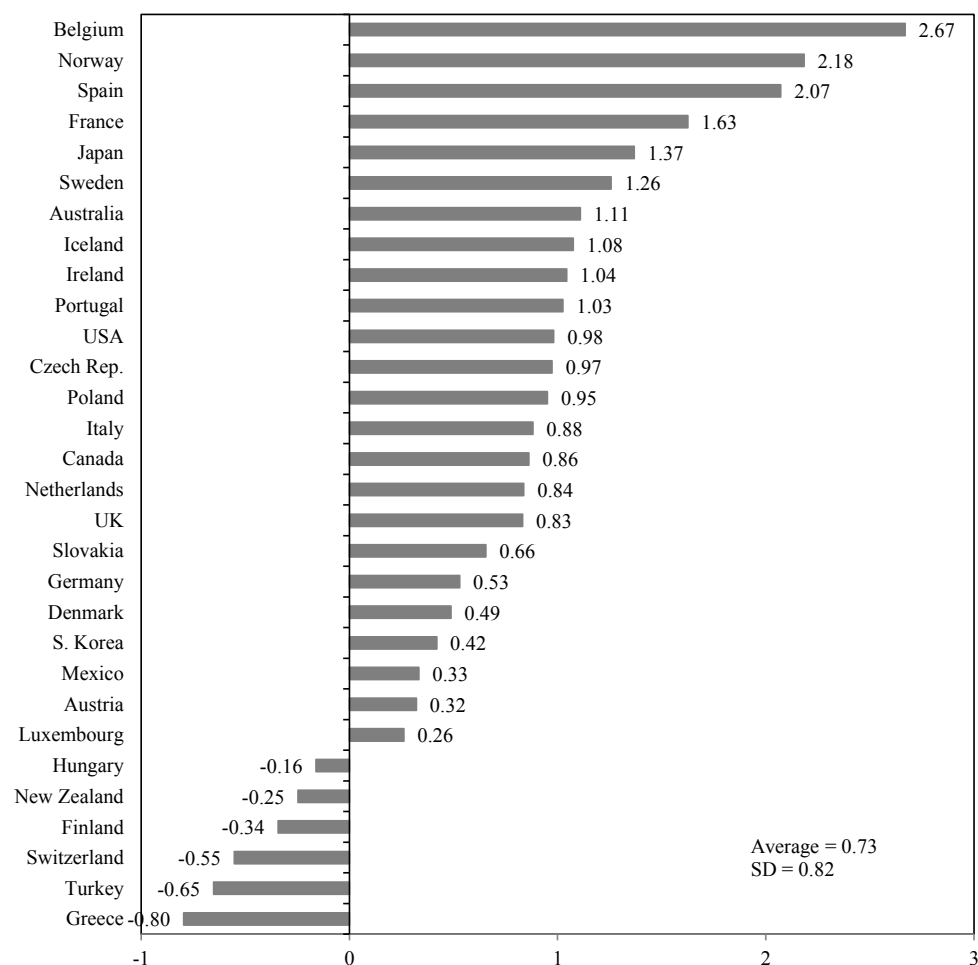
Significance: * p<0.05.

Source: World Values Survey data, pooled 1981-2009.

Fig. 4. Intracohort change in euthanasia justification across 30 OECD countries, 1981-2009.



Fig. 5. Average intracohort change in euthanasia justification, 1981-2009.*



* Justifiability of euthanasia was averaged within cohorts. Then the difference between the first and last available time point was computed. Finally, these differences were averaged across all cohorts.

Table 3. Latent growth curve modelling of cohort trajectories.

	Estimate	SE	Est./SE	P-Value
Intercept	4.315	0.098	44.165	0.000
Slope	0.248	0.023	10.722	0.000
I * S	-0.010	0.028	-0.336	0.737
CFI	0.896			
SRMR	0.111			

N=150 (all cohorts).

Table 4. Bivariate correlations of period, inter-cohort, and intra-cohort changes.

<i>Pearson correlations</i>	
Intra * inter-cohort change	0.65*
Intra-cohort * period change	0.82*
Inter-cohort * period change	0.84*

N=30 (all countries).

Significance: * $p < 0.05$.

Table 5. Two multilevel strategies to deal with APC effects in justification of euthanasia across 30 OECD countries, 1981-2009.

		DCML									C-CCREM								
		1			2			3			4			5			6		
Parameters		Estimate	SE		Estimate	SE		Estimate	SE		Estimate	SE		Estimate	SE		Estimate	SE	
Estimates of fixed effects																			
	Intercept	-109.7	***	10.69	-111.3	***	10.73	-106.7	***	10.67	5.907	***	0.195	4.800	***	0.189	4.839	***	0.191
Level 1	Cohort (equal intervals)																		
	Before 1930	(ref.)			(ref.)														
	1930-39	0.069	*	0.038	0.265	***	0.031												
	1940-49	0.338	***	0.050	0.685	***	0.032												
	1950-59	0.477	***	0.064	1.091	***	0.030												
	1960-69	0.396	***	0.079	1.229	***	0.030												
	1970-79	0.284	***	0.096	1.223	***	0.038												
	1980 and after	0.040		0.114	1.128	***	0.047												
	Cohort (unequal intervals)																		
	Before 1931													(ref.)					
	1931-38													0.272	***	0.032			
	1939-44													0.689	***	0.032			
	1945-60													1.114	***	0.025			
	1961-65													1.248	***	0.031			
	1966-75													1.373	***	0.029			
1976 and after													1.276	***	0.036				
	Age	-0.024	***	0.002							-0.024	***	0.001						
	Age centered				-0.024	***	0.002	-0.022	***	0.002				-0.025	***	0.002	-0.022	***	0.002
Level 2	Years	0.058	***	0.005	0.058	***	0.005	0.055	***	0.005									
	Estimates of covariance parameters																		
	Residual	8.702	***	0.030	8.702	***	0.030	8.703	***	0.030	8.670	***	0.030	8.669	***	0.030	8.673	***	0.030

Intercept (country)	1.158	***	0.321	1.158	***	0.321	1.156	***	0.321	0.937	***	0.288	0.881	***	0.282	0.912	***	0.289
Intercept (country*country-time)	0.237	***	0.035	0.237	***	0.035	0.239	***	0.035									
Intercept (country*cohorts)										0.074	***	0.010	0.260	***	0.030	0.306	***	0.034
Intercept (country*time)										0.568	***	0.082	0.587	***	0.087	0.551	***	0.081
Intraclass correlation (country)	11.5	%		11.5	%		11.5	%		9.1	%		8.5	%		8.7	%	
Intraclass correlation (country*country-time)	2.3	%		2.3	%		2.4	%										
Intraclass correlation (country*cohorts)										0.7	%		2.5	%		2.9	%	
Intraclass correlation (country*time)										5.5	%		5.6	%		5.3	%	
Number of parameters	12			12			12			6			6			6		
Model comparisons																		
Deviance	833226.1			833226.1			833249.6			832992.0			833191.7			833284.1		
χ^2 Model improv. (empty model)	22776.7	***		22776.7	***		22753.3	***		18379.1	***		18179.4	***		18087.0	***	
AIC	833232.1			833232.1			833255.6			833000.0			833199.7			833292.1		
<i>Empty model's deviance</i>				856002.9									851371.1					
N (number of observations)	164,923			164,923			164,923			164,923			164,923			164,923		

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

Fig. 6. Truncated average of the cohort random effects estimates from C-CCREM model 5 across countries.

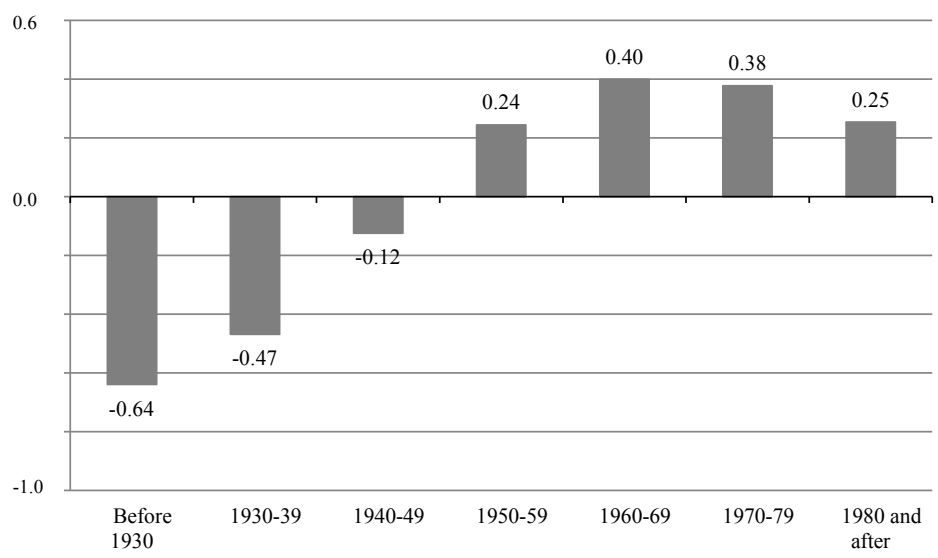
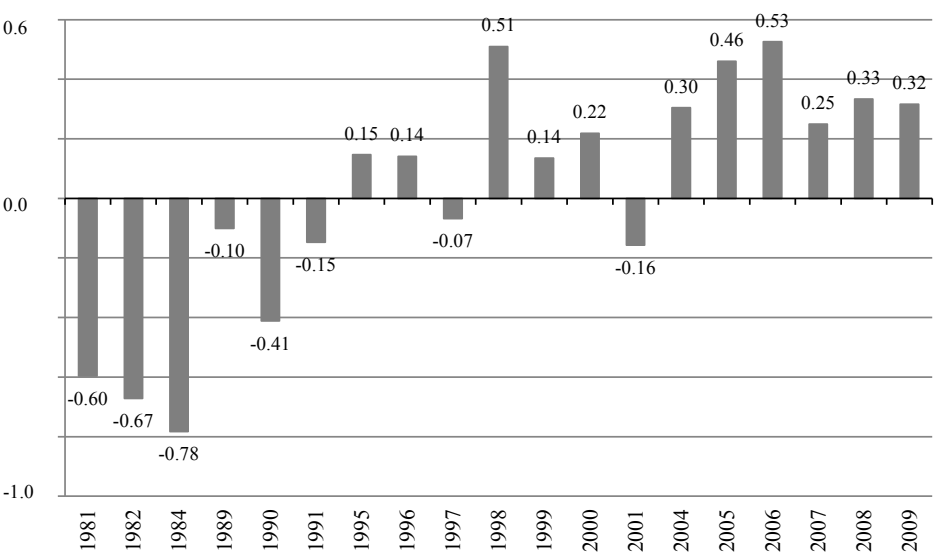


Fig. 7. Truncated average of the period random effects estimates from C-CCREM model 5 across countries.



APPENDIX

Fig. A1. Cohort patterns in euthanasia justification across 30 OECD countries, 1981-2009.

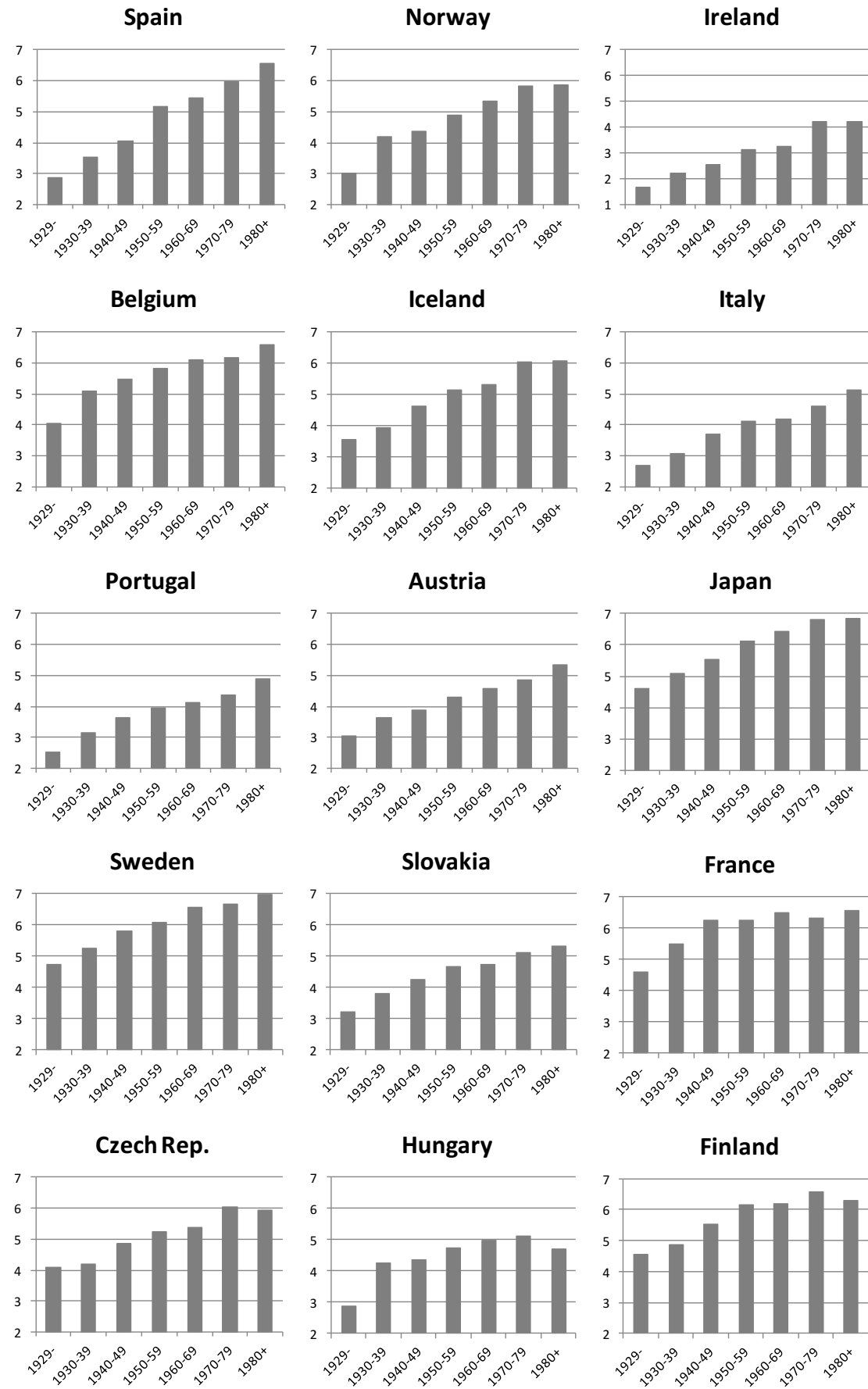


Fig. A2. Cohort patterns in euthanasia justification across 30 OECD countries, 1981-2009.

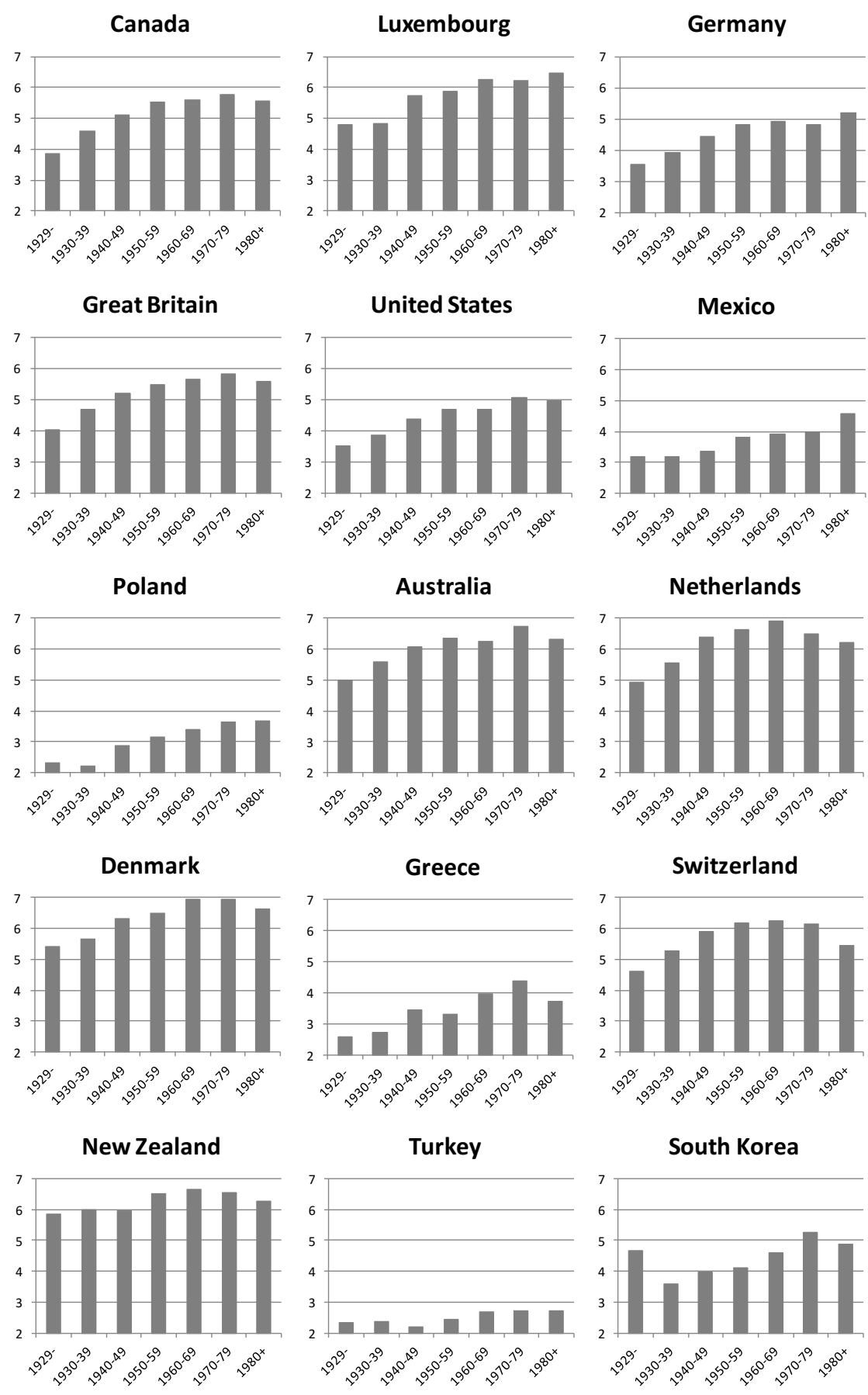


Table A1. Period changes, inter-cohort differences, and intra-cohort change in 30 OECD countries, 1981-2009.

	Period change	Inter-cohort change	Average intra-cohort change
Australia	1.36	1.30	1.10
Austria	0.82	2.28	0.33
Belgium	3.23	2.55	2.39
Canada	1.19	1.69	0.65
Czech Rep.	1.35	1.84	0.97
Denmark	0.73	1.22	0.39
Finland	1.25	1.75	-0.21
France	2.03	1.97	1.56
Germany	0.72	1.64	0.49
Greece	-0.83	1.15	-0.75
Hungary	1.95	1.84	-0.57
Iceland	1.64	2.51	0.99
Ireland	1.74	2.57	0.54
Italy	1.49	2.42	1.29
Japan	1.77	2.24	1.10
S. Korea	-0.07	0.22	0.55
Luxembourg	0.46	1.66	0.19
Mexico	0.60	1.39	0.49
Netherlands	1.25	1.27	0.71
New Zealand	-0.19	0.44	-0.33
Norway	2.85	2.88	1.76
Poland	0.97	1.38	0.86
Portugal	1.38	2.35	0.92
Slovakia	1.00	2.11	0.33
Spain	2.97	3.68	1.84
Sweden	2.06	2.21	1.27
Switzerland	-0.14	0.83	-0.79
Turkey	-0.75	0.35	-0.56
UK	1.21	1.56	0.69
USA	1.25	1.43	0.88
<i>Correlations</i>			
Intra * inter-cohort change		0.65	
Intra-cohort * period change		0.82	
Inter-cohort * period change		0.84	