Comparative Population Studies – Zeitschrift für Bevölkerungswissenschaft
Vol. 36, 1 (2011): 161-192 (Date of release: 24.11.2011)

Church Membership and Church Attendance across Time – A Trend Analysis Considering Differences between East and West Germany

Daniel Lois

Abstract: On the basis of ALLBUS data this paper examines for the period under observation 1980-2008 how the probability of church membership and the frequency of churchgoing change depending on age, calendar time and birth cohort. In accordance with conventional secularisation theories, it is shown for Western and Eastern Germany that the share of individuals with a religious denomination in the periods 1980-2008 and 1991-2008 is continuing to fall. The general secularisation trend is however counteracted by positive age effects on the probability of church membership (in Western and Eastern Germany) and on the frequency of churchgoing (in Western Germany). A form of secularisation which has received little attention so far in this context lies in the fact that the positive age effect on church attendance among Western German persons weakens significantly with ongoing calendar time. In view of cohort effects, it is shown for Western Germany that in particular the 1946-1953 birth cohort, which was considerably influenced by the 68 movement, is typified by low levels of religious participation. A revitalisation of ties to churches is shown in the new Federal States in the cohorts from 1961 onwards, which were socialised during the dissolution of the GDR and after reunification.

Keywords: Secularisation · Church membership · Church attendance · Trend analysis · APC analysis

1 Introduction

For many decades, sociologists have described the development of religion and the church under the conditions of a modern society as a crisis scenario. The fundamental presumption here is that modernisation processes such as urbanisation, industrialisation and rationalisation have caused various developments which are generally summed up under the umbrella term of secularisation. These include a reduction in the social standing of the traditional Christian forms of religion, falling

DOI: 10.4232/10.CPoS-2011-04en
URL: www.comparativepopulationstudies.de
URN: urn:nbn:de:bib-cpos-2011-04en1

acceptance of the churches and their teachings, increasing renunciation of church membership or a weakening willingness to participate in church life (*Berger* 1973; *Wilson* 1982; *Bruce* 2002).

The core of the secularisation theory is based on allegedly unambiguous empirical findings indicating an ongoing decline in religion in Germany and Europe. There is considerable empirical evidence of the decreasing significance of Christian faith or of a fall in the share of church members and in the frequency of churchgoing (e.g. *Jagodzinski*/*Dobbelaere* 1993: 79-88.; *Pollack*/*Pickel* 1999: 473-776, 2003: 457-460; *Wolf* 2007; *Voas* 2008: 28). However, these studies do not simultaneously take account of age, period and cohort effects. In order to clarify the related problems, a brief definition of these three time dimensions will be given below.

(1) Cohort and socialisation effects cover differences between various generations. This centres on the presumption that individual characteristics such as religious convictions are acquired during childhood and youth. The formative phase of socialisation is typified here by various contextual conditions (events, socioeconomic characteristics) and leaves behind a lasting influence on the further course of life (*Ryder* 1965). (2) Age and lifecycle effects relate to changes within birth cohorts which are caused by the status of a person in the lifetime. Chronological ageing, that is the advance of time after birth, is accompanied by biological ageing (physiological changes in the body), social ageing (changes in social relations) and psychological ageing (changes in attitudes, values and dispositions) (*Glenn* 2005). (3) Differences between various calendar times which equally concern all cohorts and age groups are designated as period effects. They include influences caused by the historical context, such as a typical spirit of the age or sociostructural changes that exert an impact on individuals.

If no statistical distinction is made between age, period and cohort effects, it is no longer possible to unambiguously interpret trend developments. Thus, there is a risk for instance that supposed cohort effects actually mask potential influences of age (ecological fallacy). *Jagodzinski* and *Dobbelaere* (1993: 82) are certainly aware of these problems when they write in the framework of their cohort analysis: "We cannot rule out that religious participation increases with age, although we do not consider the hypothesis to be highly plausible to such a general degree" (translated by the author). *Voas* (2008: 27) observes that religiosity is declining in Europe in a comparison between various cohorts, and notes with regard to possible age effects: "The suggestion that the higher religiosity of earlier birth cohorts merely reflects an age-related return to faith can be rejected." However, the authors of neither study provide proof backing up their supposition that there is no age effect.

Due to the lack of age-period-cohort (APC) analyses, the following questions are ambiguous at the present stage of research: Is there in addition to negative cohort and period effects a positive age effect which runs counter to the inter-age secularisation trend? Do the direction and the strength of this age effect change in the course of calendar time or in comparison between various birth cohorts? Is the secularisation process primarily reflected as a negative period effect which affects all birth cohorts and age groups equally? Do, furthermore, certain birth cohorts prove to be particularly amenable or resistant to the secularisation process?

This article aims to investigate these questions in the context of an APC analysis for the Federal Republic on the basis of trend data of the cumulated ALLBUS. When it comes to church membership and church attendance, two dependent variables are observed which can be attributed to the dimension of ritual practice.[1] Development in Eastern Germany since 1991 receives special attention in the analyses. After the repression of the church and of religion during the period of Socialism, a much discussed question is whether a revitalisation of adherence to the church can be observed in Eastern Germany after reunification. Since the studies carried out on this topic so far (e.g. *Jagodzinski* 2000; *Pollack* 2000; *Meulemann* 2003) are largely based on data until the end of the 1990s, an analysis of the current trend developments appears to be required.

2 Theoretical starting conditions: secularisation, religious market model and life cycle effects

The discussion below focuses on which age, period and cohort effects on church membership and church attendance can be anticipated in the period under observation 1980-2008. In addition to the conventional macro-level theories of social change, more recent approaches such as the religious market model and the life cycle effects, to which relatively little attention had so far been paid, are also taken up to answer this question.

2.1 Conventional secularisation theories: the tension between religiosity and modernisation

The conventional secularisation theories refer to the loss of significance of religion in the course of advancing modernisation (e.g. *Berger* 1973; *Wilson* 1982; *Bruce* 2002). Fundamental to this hypothesis is the idea that the processes of modernisation and religion are in conflict with one another. It is above all macro-level processes of societal change, such as rationalisation and functional differentiation, which are primarily regarded as being a cause of this, and these will be briefly outlined

[1] According to the present state of research, the latent construct "religiosity" can be sub-divided into several dimensions, including the dimension of religious conviction (the confession of religious tenets of faith), the dimension of religious experience (the subjective religious experience), the cognitive dimension (the knowledge of the teachings contained in a religion), the dimension of ritual practice (participation in church life) and the dimension relating to the ethical consequences of faith (*Glock* 1954).

below.[2] With regard to period and cohort effects, an attempt will be made here as far as possible to name historical periods and birth cohorts for which the above processes are particularly relevant.

The process of rationalisation (*Weber* 1972) describes the spread of a competitive economy which is orientated towards profitability and the enforcement of a scientific world view characterised by thinking in terms of cause-and-effect. The principles that are valid for scientific predictions and explanations enter everyday thinking and contradict a world view which is built on religious meaning. The increasing amenability of processes of human life to being planned and controlled leads to a "demystification" of the world. Its interpretation is no longer orientated towards uncontrollable, inexplicable powers from the next world, but towards physical, psychological and social laws (cf. *Jagodzinski/Dobbelaere* 1993: 69-76; *Pickel* 2011: 137-143). One of the most important preconditions for rationalisation processes should be the general expansion in education, which started in the Federal Republic in the 1950s, and its dynamics did not weaken until the mid-1990s (*Becker* 2006). Negative cohort effects can be anticipated for the cohorts from 1950 onwards, since this is when the process of higher qualification accelerates (cf. *Becker* 2006: 37-40).[3]

In the context of the ongoing process of functional differentiation (*Luhmann* 1977), it is presumed that autonomous, and self-referential function systems (e.g. politics, economics, law, religion, science) with their own rules are formed. It therefore can be derived that religion is continuously renouncing societal functions which it previously carried out. This relates for instance to a withdrawal from schooling, social care or healthcare. In the course of the differentiation, religion and the church lose their power to interpret societal development and their influence as an agency for socialisation. This makes it increasingly difficult for religious organisations to pass on their norms and values and to influence political decisions which are important for them (cf. *Wilson* 1982; *Pickel* 2011: 152, 161).

A further hypothesis is that the rationalisation process was favoured by the spread of urban lifestyles. Various technological changes play an important role

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2 The following depiction need not be exhaustive. The selection is orientated in line with developments which appear to be particularly relevant to individual cohorts or to the selected period under observation. A full overview of the highly-heterogeneous secularisation theories can be found for instance in *Pickel* (2011: 137-177). It should furthermore be pointed out that criticism of the secularisation paradigm has become more pronounced in the last ten years. For instance, the USA, which is one of the most economically and culturally highly developed countries in the world, still has a high level of religious vitality. This contradicts the tension that is supposed to exist between religion and modernisation. Critical discussions of the secularisation paradigm can be found in *Pickel* (2011: 137-226) or *Pollack* (2009: 60-104).

3 In accordance with a "rationalised" world view, the individual decision to belong to a Church is connected to a cost-benefit balance. It is noticeable in this context that significant waves of withdrawal from church membership took particularly place in years in which the individual fiscal burden considerably increased as a result of special levies (*Eicken/Schmitz-Veltin* 2010). Within the base period under observation, this particularly includes the year 1991 in which the solidarity levy was introduced; moreover, the years 1983, 1993, 1998 and 2007 in which VAT was increased may potentially be considered. The respective additional fiscal strains might have contributed towards a negative period effect on the probability of Church membership.

here. As a result of the expansion of private television and of the rapid growth of the Internet, the 1980s and 1990s experienced a higher level of media density and media diversity. Statements from the church which were previously unquestioned are hence undermined more frequently. At the same time, secular lifestyles came about which were caused to a major degree by the increased availability of leisure activities in the cities which compete with exercising religious practice. It is presumed in terms of the overall development that it leads to a "detraditionalisation" of private life since it has increased the possibilities open to the individual to break out of his/her narrow, socially-controlled life-world (cf. *Jagodzinski/Dobbelaere* 1993; *Pickel* 2011: 141).

The increase in socioeconomic prosperity which is typical of modernisation is regarded as a further cause of secularisation processes (*Norris/Inglehart* 2004). The increase in prosperity is linked to a reduction in existential uncertainties. Through the increase in the standard of living, the expansion of social security systems, the achievement of technological progress and the refinement of medicine, the protection against threats to external and internal security becomes stronger. The need for religious securities and compensations falls as a result of growing possibilities to control society and nature (cf. *Pollack* 2009: 70). From a cohort perspective, in particular the 1922-1934 cohorts, who can be regarded as the War and post-War generation, grew up under conditions of material need. If these socialisation influences have a long-term impact, the 1922-1934 cohort should be typified by a higher level of religious affiliation and religious practice.

The change in values has also exerted a potentially positive impact on secularisation. The individualisation process in the post-War period, which is interpreted in the sense of releasing from traditional social ties (*Beck* 1986) was accompanied by a change in social values. This can already be demonstrated in the 1950s, but jumped rapidly in the 1960s and at the beginning of the 1970s (*Klages* 1988). The changes in values are typified above all by a fall in the significance of duty and conformity values (e.g. discipline, obedience, fulfilling obligations, submission, loyalty) and at the same time an increase in the significance of self-development values (e.g. emancipation from authorities, equal treatment, democracy and creativity). As potential causes of the change in values, various modernisation processes are discussed in turn which range from the increase in prosperity and the expansion of the social state in the post-War period via the sociopsychological consequences of expansion in education, through to the media revolution (*Klages* 1988: 51-59). The change in values can be connected with a turning away from religion and the churches, since the orientation towards self-development values is accompanied by a rejection of external demands such as religious norms which are asserted in an authoritative manner. As a result of their traditionalistic value system and hierarchical understanding of authority, the churches no longer did justice to the now prevalent expectations and values of people in the course of the rapid value change (*Klages* 1984: 95-100). From a cohort perspective, particularly the so called "68 generation" is said to be characterised by emancipation from the church, which was regarded as an institution of the dominant duty and acceptance values. According to various studies on the change in values (e.g. *Klein/Pötschke* 2004) it is particularly the 1946-1953

cohort ("APO generation") which was affected by the student movement and the events related to the year 1968.

2.2 The religious market model and developments in Eastern Germany after 1990

The religious market model was developed by US sociologists (*Stark/Bainbridge* 1987; *Stark/Iannaccone* 1994; S*tark* 1999), and its core statements contradict the conventional secularisation theories. From this perspective, the individual "demand" for religion has not fallen in the course of the modernisation process. It is rather regarded as an inherent expression of universal human needs for security and answers to existential questions. The desire to overcome the difficulties of life and one's own mortality leads to a situation in which – as compensation for a lack of rationally-examinable solutions – religious faith contents such as a life after death are accepted. In the market model, religious diversity is based primarily on what is on offer from the churches and on the extent to which the religious market is regulated by the State. A fall in religious vitality can be traced in this regard to the fact that the monopoly churches are no longer able to satisfactorily meet the religious needs of the "individualised" faithful. If a large number of religious "entrepreneurs" compete on the market, the seeking faithful will once again find a supply that corresponds to their preferences. The religious market model is hence a purely supply-orientated rational choice approach.

The religious market model leads to some hypotheses regarding the consequences of the historically most significant event which occurred within the period under observation: the German reunification in 1990. Germany is a special case because of the East-West differences which are highly pronounced in questions of religiosity. In cultural terms, these differences result from the fact that Western Germany has always been strongly influenced by the Southern German Catholic cultural tradition, whereas the liberal-to-secular currents of the largely Protestant North East are dominant in Eastern Germany (cf. *Pickel* 2003). In the medium term, these divergences were amplified by decades of experience with systems that were diametrically opposed in political terms. In the course of "forced secularisation" (*Meulemann* 2004), the share of people with no denomination in the former GDR increased, from no more than 5-8 % in 1950, to roughly 70 % in 1989 (*Pollack* 2000: 2). State repression expressed itself in a number of measures addressed against the church, which in particular were carried out in the second half of the 1950s. These included the arrest of church workers, the impediment of religious events, the promotion of religious disaffiliation in companies, censorship of religious contents from the media and the abolition of the state collection of church tax via the tax offices. Particularly serious consequences resulted from the introduction of the state-organised "*Jugendweihe*" (youth consecration), which suppressed confirmation on a massive scale. It should also be pointed out that "historical materialism" which has been introduced by State socialism was an ideological alternative to transcendental beliefs which was shared by broad groups of the population into the 1980s (cf. *Storch* 2003; *Meulemann* 2004).

What development can now be anticipated in the time after reunification? According to the secularisation theories, one may presume for Eastern Germany that there would be a further downward trend after 1990 – possibly after a return to the level corresponding to the modernisation level (*Pickel* 2010). One would however have to presume here that the secularisation theories are based on a picture of the permanent fall of religion without the possibility of a return to a former level (*Voas* 2008: 40-44). On the basis of the religious market model, it can be predicted, by contrast, that there would be a revitalisation of religion after the fall of state repression and a restoration of a religious market. Even if no entirely free religious market came about after reunification because of Article 140 of the Basic Law (*Grundgesetz*), there is greater scope for competition than has previously been (cf. *Jagodzinski* 2000: 54-57). Accordingly, an increase of church membership and church attendance can be expected from 1991 onwards. From a cohort perspective, the weakest adherence to the church should be anticipated in the 1945-1965 cohorts. These groups of individuals can be referred to as GDR cohorts since they were influenced in their youth by an established Socialist state. A revitalisation of religion, by contrast, can be anticipated in the 1961-1974 and 1975-1990 cohorts, who were socialised during the dissolution phase of the GDR and after reunification (cf. *Meulemann* 2003: 274-275).

There is already a detailed study by *Pollack* (2000) on the development of religiosity in Eastern Germany following reunification. It reaches the conclusion that, firstly, a loss of significance of religion and the church has continued after 1989. This is expressed in marked waves of membership resignations from the popular Christian Churches from 1992 onwards, which appears to have been particularly motivated by avoiding having to pay the church tax. Secondly, however, there are also indications of a trend towards consolidation of membership of the popular churches, expressing itself in a slight increase in those joining the churches after 1989, a temporary increase in the christening rates and a slight increase in the share of those attending religious services. *Meulemann* (2003) reaches the conclusion that the East-West difference in various faith contents in comparison between two measurement times, 1991 and 1998, has remained constant; at the same time, however, one can observe a tendency towards a revitalisation of faith in the youngest cohort surveyed (cohorts from 1974). In an international comparison, the lack of revitalisation of religion in Eastern Germany appears to be more of an exception. *Pickel* (2010) shows that the proportion of church members increases considerably in most Eastern European states (especially in Russia, Bulgaria and Lithuania) since 1990.

2.3 Age and lifecycle effects or the question: "How does religiosity change across the life course?"

Whereas secularisation can be primarily understood as intergenerational change, lifecycle effects relate to the conditions which determine the extent of individual religiosity in the respective life phase. There is so far no standard theory on the basis of which influences on religiosity exerted by age can be predicted. In the Literature

however, several models can be found that assume the shape of the age effect. *Bahr* (1970) distinguishes between four patterns: (1) According to the stability model, there is no independent age effect. The empirical positive correlation between age and church attendance is accordingly an artefact, possibly caused by cohort effects. (2) The traditional model predicts a drop in religious practice between the ages of 18 and 30, followed by an increase. (3) In the framework of the family cycle model it is presumed that the frequency of churchgoing increases after the transition into marriage, climaxes when children reach the age of five or older and falls once more after all children have left home. (4.) The "disengagement" model finally presumes a fall in the frequency of churchgoing in advanced age.

The state of research on age-specific changes in religiosity can be summed up as follows: Various studies indicate the existence of an age effect. These particularly include two studies on the basis of panel data (*Lois* 2011; *Argue et al.* 1999), as well as APC analyses of the frequency of churchgoing on the basis of trend data from the United States (*Miller/Nakamura* 1996; *Schwadel et al*. 2009; *Schwadel* 2010). The findings on the form of the age effect are not unambiguous. The results of most studies indicate a monotone increase in religiosity across the life course (*Miller/Nakamura* 1996; *Argue et al.* 1999). Additionally, for church attendance and the subjective importance of religion, there are however also indications of a (temporary) reduction in the transition from youth to adulthood (*Uecker et al.* 2007; *Petts* 2009). The stability and "disengagement" models are however hardly supported by research.

With regard to the explanation of age effects, only a small number of arguments are found which favour a direct, causal effect of age on religiosity. One of the hypotheses put forward here is that people become increasingly aware of their own mortality as they age, so that particularly the belief in a life after death should increase (*Stark/Bainbridge* 1987: 50). Moreover, the patterns named by *Bahr* (1970) already imply several indirect explanations. For instance, the family cycle model is linked with the idea that changes in the frequency of churchgoing over a lifecycle can be traced back to biographical transitions such as marriage and family-formation. Some important points in a person's lifetime are tackled below, which according to the findings of previous studies impact the probability of church membership or the frequency of churchgoing.

In the context of the family cycle, it can be regarded as secure knowledge that transition into marriage is linked to an increase in religious practice (*Lois* 2011; *Thornton et al*. 1992). Empirical research moreover indicates that a positive effect is exerted by having school-age children on church attendance and church membership of the parents (e.g. *Lois* 2011; *Stolzenberg et al*. 1995; *Schwadel et al.* 2009). An event occurring late in the family cycle is widowhood, for which positive effects are also reported on various religiosity indicators (*Lois* 2011; *Brown et al.* 2004). Additionally, biographical transitions are indicated which contribute towards a drop in religious practice and an increase in the probability of resigning church membership. These include the acquisition of advanced educational qualifications (*Lois* 2011; *Mayrl/Ouer* 2009), starting work (*Birkelbach* 1999) or divorce (*Lois* 2011; *Stolzenberg et al.* 1995; *Argue et al.* 1999).

The frequency and the timing of the various biographical transitions should determine whether a positive or negative overall trend can be observed in a life cycle, i.e. a correspondingly indicative age effect. A new perspective of the process of secularisation emerges at this point. The above studies indicate a positive or at least u-shaped age effect. Accordingly, those lifecycle processes which exert a stimulating effect on religiosity have so far prevailed. Here, however, one may certainly anticipate a shift in the weight since some very well proven demographic changes can be observed in recent decades. These for example include the delay in first marriage, an increase in non-marital cohabitation, the rising divorce rates (in Western Germany) and the increasing female labour force participation (in an overview: *Peuckert* 2008: 32-37, 169, 244-246). Transitions during a lifetime leading to a fall in religious activities are hence becoming more frequent, whereas positive influencing factors on religiosity are becoming less significant. One may hence presume that the positive impact of age in the course of historical time weakens in comparison between various birth cohorts. In a study with panel data, *Lois* (2011) can confirm that the age-specific increase in the frequency of churchgoing becomes weaker as calendar time advances. One goal of this study is to replicate this finding using trend data.

3 Data and method

3.1 Data basis and analysis procedure

As was already discussed in the introduction, processes of social change such as secularisation can only be satisfactorily analysed if one simultaneously takes three time effects into account (age, period, cohort). This study relies on pooled trend data of the cumulated ALLBUS for the years 1980-2008.[4] The major advantage of this data basis is the fact that the period under observation covers almost 30 years in the ALLBUS, whereas in the Socio-Economic Panel for instance, church attendance has only been surveyed since 1990. The ALLBUS data are hence comparatively well suited to enable an analysis of the long-term secularisation process.

To analyse the data, multi-level analysis is used which takes into account the nesting of individuals into different levels (introduction e.g. *Hox* 2002; *Luke* 2004). Generally, trend data have such a hierarchical structure since respondents (level 1) are embedded in the time context of the survey times (level 2) (cf. *Klein* 2005). This approach can be expanded for the special case of an APC analysis such that the time context (spanning different ages) is broken down into period and cohort influences. It should be taken into account here that members of a birth cohort, or respondents

[4] The target population up to 1990 consists of all eligible persons in the (old) Federal Republic and West Berlin who live in private households. Since 1991 the target population has consisted of the adult residential population (i.e. Germans and foreigners) in Western and Eastern Germany.

at a specific historical time, are probably more similar than could be expected by chance. Multi-level models with random coefficients cover both influences of the time context that were observed and those which were not observed, and lead to valid inference-statistical estimates (*Yang* 2008).

The attribution of persons to cohorts and periods is however not hierarchical, since the respondents at a survey time belong to several cohorts and the members of a cohort are surveyed at different survey times. In the context of an APC analysis, hence, it is not a 3-level model, but a so-called "cross-classified random effects model" (CCREM, *Yang/Land* 2006; *Yang/Land* 2008) which is used. The cross classification used here is presented in Table 1, the columns correspond to all 16 ALLBUS survey years from 1980 and the lines to all 19 5-year cohorts from the birth year 1895 on. This means in conceptual terms that persons of a specific cell in the table are embedded in two time contexts, period and cohort, at the same time. Thus, for instance, n = 277 persons born between 1960 and 1965 were surveyed in 2000.

On the basis of this cohort × period matrix, regression models are estimated with the dependent variables of religious denomination and frequency of churchgoing (for operationalisation see below). Multi-level models with random coefficients (*Yang/Land* 2006, 2008) are used here. In the case of church attendance, the corresponding model has the following specification:

Level 1 (within cell) model:

$$\mathrm{CHURCHGOING}_{ijk} = \beta_{ojk} + \beta_1 \mathrm{LNAGE}_{ijk} + \beta_2 \mathrm{FEMALE}_{ijk} + \beta_3 \mathrm{DENOMINATION}_{ijk} + e_{ijk}$$

Level 2 (between-cell) model:

$$\beta_{0jk} = \gamma_0 + u_{0j} + v_{0k}$$

For i = 1, 2,..., n_{jk} persons within cohort j and period k;
j = 1,..., 19 birth cohorts;
k = 1,..., 16 time periods (survey years).

Within birth cohort j and survey year k, the frequency of churchgoing for each person i is modelled as a function of their logarithmised age, of the gender and of affiliation to a denomination. β_{0jk} is the intercept or "cell mean" in Table 2, that is the mean frequency of churchgoing of persons who belong to birth cohort j and were surveyed in year k. β_1-β_3 are the level-1 fixed-effects. e_{ijk} is the random individual effect, i.e. the deviation of the frequency of the churchgoing of an individual i in cohort j and period k from the cell mean. γ_0 constitutes the fixed part of the intercept, or to be more precise the mean frequency of churchgoing over all persons (grand mean). This random-intercept model specification allows the level-1 intercept to vary randomly from cohort-to-cohort (lines in Tab. 2) and period-to-period (columns in Tab. 2). u_{0_j} is the residual random effect of cohort j, i.e. the contribution of cohort j averaged over all periods. v_{0k} is the residual random effect of period k – that is,

Tab. 1: Alternative cohort classifications for Western and Eastern Germany

Western Germany		Eastern Germany	
Cohorts	Designation	Cohorts	Designation
1895-1921	Pre-War generation	1895-1930	National unity
1922-1934	War/post-War	1931-1945	Establishment of the GDR
1935-1945	Adenauer generation	1946-1960	Consolidation of the GDR
1946-1953	APO generation	1961-1974	Dissolution of the GDR
1954-1964	New social movements	1975-1990	Reunification
1965-1975	Generation Golf		
1976-1990	Reunification		

Note: Inspired by *Meulemann* (2003: 274-275) and *Klein/Pötschke* (2004: 449).

the contribution of period k averaged over all cohorts.[5] Additionally, analyses are carried out in which the slope for the logarithmised age (β_1) can also randomly vary over cohorts or periods respectively ("random slope model").

In the case of the analysis of church membership (1 = yes, 0 = no), a logistic multi-level model (*Guo/Zhao* 2000) is used which is formally defined as follows (notation see above):

Level 1 (within cell) model:

$$\ln\left(\frac{\pi_{ijk}}{(1-\pi_{ijk})}\right) = \beta_{ojk} + \beta_1 \text{ALTERZ}_{ijk} + \beta_2 \text{ALTER}^2_{ijk} + \beta_3 \text{FRAU}_{ijk}$$

Level 2 (between-cell) model:

$$\beta_{0jk} = \gamma_0 + u_{0j} + v_{0k}$$

The symbol π represents the probability of having a religious denomination. Hence, the dependent variable of the model shown is the logarithmised chance of membership of a religious organisation.

In addition to the multi-level models with random coefficients, OLS regressions (churchgoing) and logistical regressions (church membership) are estimated with conventional (fixed) effects. Robust standard errors (*Rogers* 1993) are calculated in these models in order to also allow for the hierarchical data structure, i.e. the nesting of persons into cohorts and survey times. The clustering of the sample corresponds to the cohort × period cells presented in Table 2.

5 A normal distribution is presumed for e_{ijk},, u_{0k}, and v_{0k}.

Tab. 2: Cross-classification of 19 cohorts and 16 survey years (Western Germany)

	Survey year																
Cohort	1980	1982	1984	1986	1988	1990	1991	1992	1994	1996	1998	2000	2002	2004	2006	2008	Total
1895-1900	58	35	17	9	6	5	0	1	1	0	1	0	0	0	0	0	133
1901-1905	99	86	74	43	36	26	8	12	8	6	4	2	0	0	0	0	404
1906-1910	170	173	129	115	90	50	19	33	21	13	13	12	4	0	0	0	842
1911-1915	257	223	198	130	141	119	51	88	57	36	43	32	7	9	7	3	1,401
1916-1920	172	182	160	143	171	164	65	97	59	58	71	42	15	19	13	14	1,445
1921-1925	223	224	227	225	202	217	108	162	125	96	114	90	65	51	47	61	2,237
1926-1930	217	239	208	188	212	224	109	169	154	150	153	137	100	89	88	77	2,514
1931-1935	224	216	196	199	189	183	90	155	168	169	184	173	110	108	124	130	2,618
1936-1940	268	291	255	250	236	266	121	212	230	221	204	224	168	157	232	195	3,530
1941-1945	263	228	233	269	180	217	107	166	171	196	178	185	139	165	181	184	3,062
1946-1950	244	240	249	256	224	238	128	199	193	213	155	204	156	132	186	165	3,182
1951-1955	247	256	245	255	232	306	141	225	215	207	178	228	162	154	192	204	3,447
1956-1960	218	220	242	291	275	310	173	287	245	227	198	249	178	218	209	226	3,766
1961-1965	72	140	240	278	326	359	177	271	256	275	211	277	227	214	245	256	3,824
1966-1970	0	0	19	112	241	226	157	218	275	257	201	213	195	200	227	230	2,771
1971-1975	0	0	0	0	0	41	49	88	159	195	140	181	145	165	173	166	1,502
1976-1980	0	0	0	0	0	0	0	0	0	60	107	171	139	123	122	141	863
1981-1985	0	0	0	0	0	0	0	0	0	0	0	30	106	160	152	169	617
1986-1990	0	0	0	0	0	0	0	0	0	0	0	0	0	0	69	140	209
Total	2,732	2,753	2,692	2,763	2,761	2,951	1,503	2,383	2,337	2,379	2,155	2,450	1,916	1,964	2,267	2,361	38,367

Source: Cumulated ALLBUS (1980-2008); own calculations.

A key problem in APC analysis is the model identification problem – that is, the perfect linear relationship between age, survey time and birth year (survey time - age = birth year). Various measures are taken to resolve the confounding of age, period and cohort effects in the regression model. In order to gain degrees of freedom, at least five cohorts are summed up to form a birth cohort (*Yang/Land* 2006: 83-85). With this specification, it is no longer possible, knowing the age and the survey year, to conclude the exact birth year. Moreover, non-linear age effects are estimated by including age in the shape of a linear and squared term (church membership) and alternatively in logarithmised form (church attendance) into the regression models. Finally, there is an advantage to be gained by the modelling of period and cohort influences via random effects which is the reduction of collinearity problems in the estimation (*Yang/Land* 2006).

3.2 Operationalisation

The analysis encompass two dependent variables: Church membership is operationalised via a dichotomous variable which assumes a value of 1 if a person belongs to one of the following religious denominations: Protestant (including independent churches), Roman Catholic, other Christian religious community and other non-Christian religious community. A 0 is coded if a person states that he or she does not belong to any religious community.

The frequency of churchgoing is measured via a scale on 6 levels in the ALLBUS (6 = more than once per week, 5 = once per week, 4 = between once and three times per month, 3 = several times per year, 2 = less frequently, 1 = never). No transformation of these variables into the average annual attendance at religious services was carried out because of the different ranges of most categories.[6] Nor is a categorisation beneficial since this approach causes a loss of information.

Continuous variables on the survey year and on the cohort are included in the regression models with fixed effects in order to be able to identify linear and monotone time trends. In the case of the survey year, the corresponding variable measures how many years have passed since the respective first measurement period (1980 = 0 and 1991 = 0). The variable concerning birth cohorts can have values from 1 = 1895-1900 to 19 = 1986-1990 (cf. also Tab. 2). Moreover, cohort classifications are used in the fixed effects models (FE) which are orientated to content aspects that is to prominent historical periods (cf. Tab. 1).

Gender (1 = man, 0 = woman) is included as a further control variable. It should be stated at the outset that it is shown in all models that women are more religious than men (*Collett/Lizardo* 2009). Furthermore, an indicator measuring church membership (1 = yes, 0 = no) is considered in the regression models on churchgoing.

6 For the purpose of comparison, in addition to linear regressions, "Ordered Logit Regressions" (with fixed effects) were also calculated which are specifically suited to an ordinal scale level. The results of the estimate of the frequency of churchgoing remained largely stable here.

All analyses are carried out separately for Western and Eastern Germany, the East-West classification is based on the current place of residence.

4 Results of the APC analyses

4.1 Age, period and cohort effects on church membership

The first focus is the question which age, period and cohort effects can be identified with regard to the probability of church membership. Table 3 shows the results for Western Germany. The model with random coefficients (Model 1) confirms that the probability of church membership changes depending on age, birth cohort and calendar time. The fixed estimated age effect is u-shaped (cf. also Fig. 1) and highly significant. As predicted in the traditional model of *Bahr* (1970), the probability of church membership declines initially on transition from youth to adult age to finally increase once again. Moreover, both random effects in Model 1 show that the probability of being a member of a religious association differs significantly between the 19 birth cohorts and – regardless of this – between the 16 survey times. The period effect is stronger than the cohort effect.[7]

The results in Model 1 do not reveal whether the period and cohort effects follow a monotone trend over time. In Model 2, the calendar time is hence operationalised as a metric covariate (years since 1980). In accordance with conventional secularisation theories, it shows a negative period effect on the probability of church membership (b = -.03). Figure 2 illustrates the period effect. It becomes clear, that religious nonaffiliation in Western Germany increases successively during the period from 1980 to 2008. However, the proportions of church members predicted by the random effects model are slightly lower as the observed values.[8]

On the basis of Model 2, moreover, there are no indications of a monotone time trend across the 19 birth cohorts. The corresponding coefficient (b = -.05) is not significant. The cohort sub-division, which is orientated on content-related aspects, and on which Model 3 is based, however leads to substantial results. As one might anticipate, the lowest probability of being tied to a denomination is shown by the 1946-1953 cohort (reference), which was particularly influenced by the events in and around 1968. A significantly higher level of church membership is however demonstrable in the Adenauer generation (1935-1945), and in particular in the War and post-War generations (1922-1934). These results correspond with the presumption that the material need in the post-War period exerted a positive influence on adherence to the church. The share of church members in the younger cohorts from the birth year 1954 onwards is slightly higher than in the reference cohort, but the cor-

7 According to the intraclass correlation, the share of the period variance among the overall variance is 2.8 % and the share of cohort variance is only 0.7 %.

8 The positive outlier in the East German survey of the year 2002 is possibly caused by a thematical focus on religion.

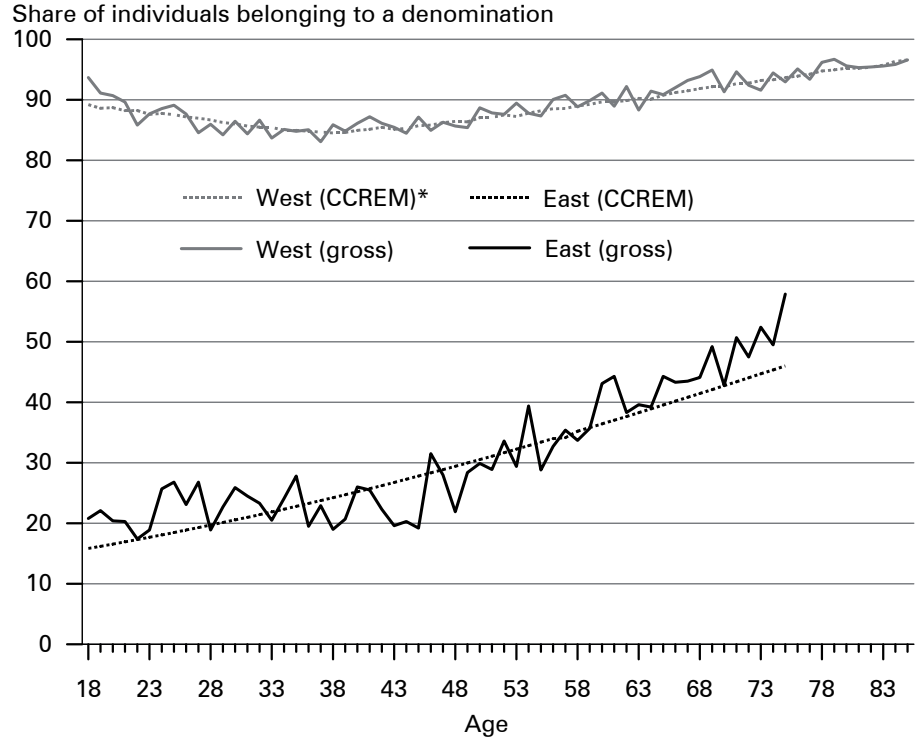
Tab. 3: Age, period and cohort effects on the probability of church membership in Western Germany (logistic cross classified models with random and fixed effects)

	Model		
	1	2	3
Fixed effects	Logit coefficients (z-values)		
Intercept	.70***	2.97***	2.39***
	(3.5)	(7.3)	(20.9)
Man	-.47***	-.47***	-.47***
	(-14.7)	(-13.1)	(-13.2)
Age (centred)	-.05***	.004	.01
	(-6.9)	(0.4)	(1.5)
Age²	.001***	.001***	.001***
	(8.7)	(9.4)	(6.0)
Period (years since 1980)	-	-.03**	-.03***
		(-2.5)	(-5.6)
5-year birth cohorts (ordinal)	-	-.05	-
		(-0.9)	
Cohort classification (ref.: 1946-1953)			
pre-War generation (1895-1921)	-	-	.33
			(1.5)
War/post-War (1922-1934)	-	-	.49***
			(3.6)
Adenauer generation (1935-1945)	-	-	.25**
			(3.0)
Social movements (1954-1964)	-	-	.10
			(1.4)
Generation Golf (1965-1975)	-	-	.18
			(1.4)
Reunification (1976-1990)	-	-	.24
			(1.2)
Random effects	Variance components (χ^2-values)		
Intercept period	.096***	-	-
	(319.4)		
Intercept cohort	.023***	-	-
	(112.0)		

Note: n = 39861; * p ≤ .05; ** p ≤ .01; *** p ≤ .001.

Source: Cumulated ALLBUS (1980-2008); own calculations

Fig. 1: Age-related changes of the share of church members



* CCREM = Cross classified random effects model

Source: Cumulated ALLBUS (1980-2008); own calculations

responding differences are not significant. An illustration of the cohort effects for Western Germany – on the basis of Model 3 – can be found in Figure 3.[9]

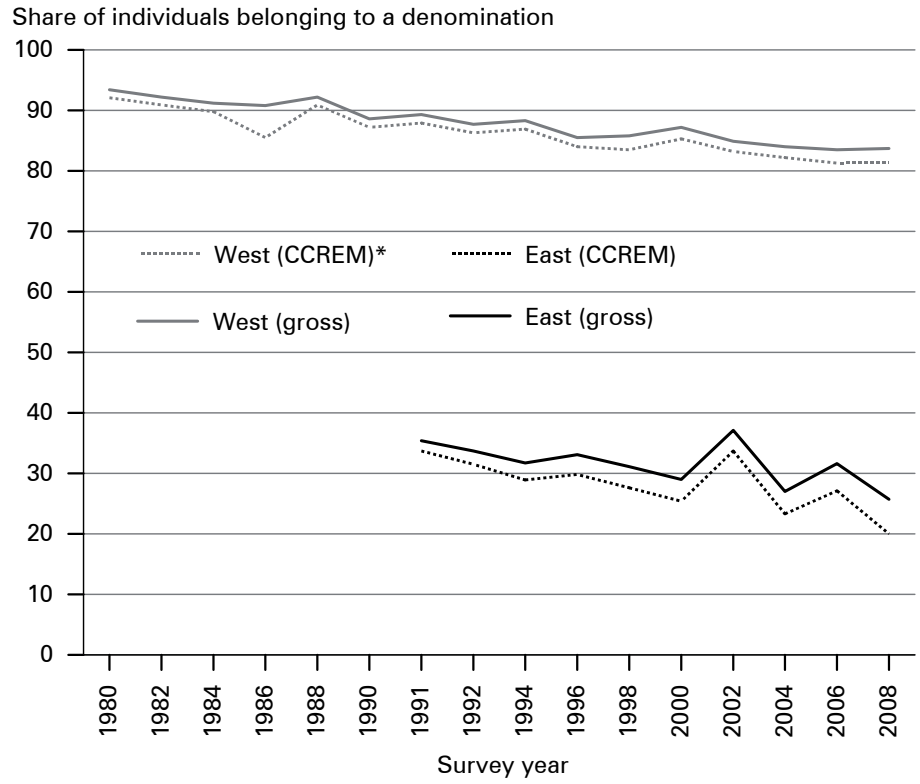
The observed values in Figure 1 also indicate the presence of a positive age effect for Eastern Germany. Religious nonaffiliation decreases from roughly 20 % at the age of 18 to about 50 % at the age of 75. As is made clear by Model 1 in Table 4 and in the graphic presentation in Figure 1, this gross effect also remains largely stable in multivariate terms.[10] Both the linear (b = .03) and the squared age term (b = .001) are highly significant.

Moreover, cohort and period effects on the probability of church membership can also be discovered for Eastern Germany on the basis of Model 1 in Table 4. The variance of the corresponding regression constants over the survey years (0.047), and cohorts (0.009), is significant. The results of Model 2 in Table 4 confirm that the

9 The cohort effects shown here are centred on a mean age and on the year 1994.

10 The predicted values for the age range above 75 years are not shown because of relatively small case numbers (n < 100) in Figure 1.

Fig. 2: Proportion of church members across birth cohorts



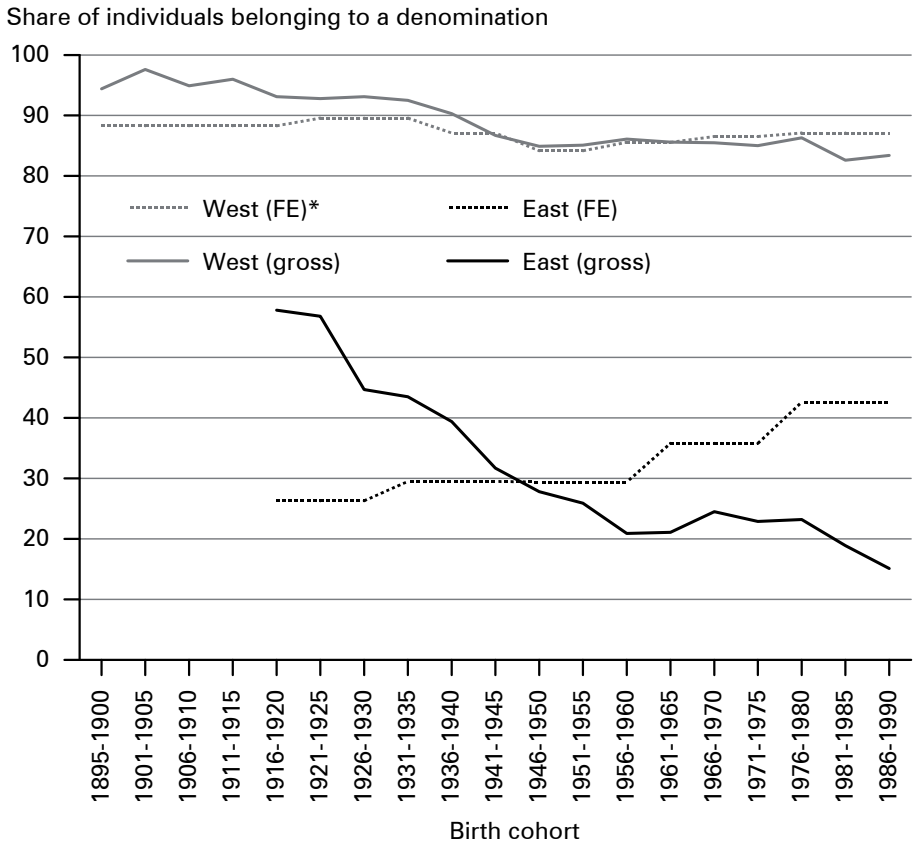
* CCREM = Cross classified random effects model

Source: Cumulated ALLBUS (1980-2008); own calculations

probability of a denominational tie in Eastern Germany has fallen since 1991. The corresponding period effect (b = -.05) is significant. Figure 2 accordingly shows that church membership decreases successively between 1991 and 2008, from 30 % to roughly 20 %. This corresponds to the results that have been quoted, according to which the churches in Eastern Germany have also lost further members after reunification.

Regarding cohort effects in Eastern Germany, it is not possible to identify any monotone time trend in Model 2 (Tab. 4). The corresponding coefficient (b = .09) is not significant. Also the cohort effects which are predicted by the multi-level model with random coefficients for Eastern Germany (not shown), are rather marginal and do not follow a recognisable pattern. One argument against the random effects model is however that the underlying 5-year cohorts are artificial since the corresponding groups of individuals do not typify themselves in each case by having collectively experienced prominent historical phases. Particularly in view of the drastic political transformation process in the former GDR, the sub-division in GDR

Fig. 3: Proportion of church members across survey years



* FE = Fixed-Effects

Source: Cumulated ALLBUS (1980-2008); own calculations

and post-GDR cohorts that has been discussed appears to be more applicable. For this reason, a fixed effects model is calculated in Model 3 (Tab. 4) in which a total of five birth cohorts are compared with one another. The results indicate that the probability of church membership in the two youngest cohorts (1961-1975 and 1976-1990), which were socialised during the dissolution years of the GDR and after reunification, has significantly increased in comparison to the 1946-1960 "GDR cohort". These findings correspond with the results reported by *Meulemann* (2003). However, the result that no significant difference between the pre-GDR and the GDR cohorts (1946-1960) can be shown speaks against any decisive influence having been exerted by State Socialism.

It appears to be worth discussing whether these results can be interpreted as a revitalisation of adherence to the church. It should be borne in mind that the cohorts from 1961 onwards are also affected by the general fall in church membership num-

Tab. 4: Age, period and cohort effects on the probability of church membership in Eastern Germany (logistic cross-classified models with random and fixed effects)

	Model		
	1	2	3
Fixed effects	Logit coefficients (z-values)		
Intercept	-.82***	-1.51*	-.61***
	(-9.8)	(-2.2)	(-7.1)
Man	-.33***	-.32***	-.33***
	(-7.8)	(-7.1)	(-7.2)
Age (centred)	.03***	.04***	.04***
	(14.8)	(3.2)	(5.7)
Age²	.001***	.001***	.0004**
	(6.0)	(6.4)	(3.2)
Period (years since 1991)	-	-.05***	-.04***
		(-3.4)	(-5.1)
5-year birth cohorts (ordinal)	-	.09	-
		(1.3)	
Cohort classification (ref.: 1946-1960)			
National unity (1895-1930)	-	-	-.13
			(0.7)
Establishment of the GDR (1931-1945)	-	-	.02
			(0.2)
Dissolution of the GDR (1961-1975)	-	-	.30*
			(2.3)
Reunification (1976-1990)	-	-	.60*
			(2.5)
Random effects	Variance components (χ^2-values)		
Intercept period	.047***	-	-
	(117.4)		
Intercept cohort	.009**	-	-
	(41.0)		

Note: n = 11270; * p ≤ .05; ** p ≤ .01; *** p ≤ .001.
Source: Cumulated ALLBUS (1980-2008); own calculations

bers with advancing calendar time – and by age effects. One example may serve to clarify this: In 1991, the predicted probability of church membership of an Eastern German female person aged 31 (birth year 1960) is 25 %. This value falls to 22.6 % in 2008, once age and period effects have been offset. For a comparable person who

was however born in 1961 and is hence aged 30 in 1991, the probability of Church membership is 30.6 % and falls to 27.5 % by 2008. Since the 1961-1975 birth cohort, which was socialised during the dissolution of the GDR, shows a higher starting level in the first survey in 1991, the term "revitalisation" appears to be appropriate.

Figure 3 shows the corresponding cohort-specific pattern.[11] A comparison of gross and net cohort effects reveals major differences, especially among Eastern German respondents. The actual influences of the birth cohort cannot be clearly identified until age and period effects are controlled for. The gross cohort effects are, by contrast, highly biased as a result of the already documented age-specific changes in ties to the churches.

4.2 Age, period and cohort effects on church attendance

The analysis of the development of church membership does not yet permit any statement regarding the degree to which the members of a religious organisation are actively involved in church life (religious vitality). Therefore, a further APC analysis is carried out examining the frequency of churchgoing. Church membership is controlled for in all the regression analyses below. The diagrams also refer exclusively to persons with a denomination. It is hence possible to determine the net effects on religious practice, i.e. when controlling for membership.

The results for Western Germany are shown in Table 5. According to the results of the multi-level model with random coefficients (Model 1), the frequency of churchgoing increases in a monotone fashion with increasing age (b = .63). This age effect is statistically independent of cohort and period effects which are controlled for. In technical terms, the frequency of churchgoing differs not only between the cells in Table 2, but also within a cell, i.e. when keeping a specific calendar year and a birth cohort constant. The best model adjustment can be achieved by the logarithmic conversion of age. The resulting shape of the age effect is visible in Figure 4, which relates to Western German women. According to the predicted values, the frequency of attendance at religious services, increases successively with age. As a result of the logarithmic conversion, the increase is however not linear, but becomes increasingly flat. The observed values also show that church attendance only increases until the age of 75, and subsequently falls once more. It is however not necessarily a "disengagement" in the sense of a deliberate withdrawal of old people from social roles which is responsible for this. A more plausible explanation lies in increasing physical impairments of older people which particularly pose obstacles to their churchgoing.

Has the strength of the age effect changed within the period under observation? In order to answer this question, the slope for the age effect is allowed to vary ran-

[11] The cohort effects are centred here on a mean age and the middle of the respective observation periods. Cohort effects for the cohorts in Eastern Germany prior to 1916 are not shown because of small numbers of cases. The x-axis in Figure 3 corresponds to the 5-year cohort classification. Hence, smaller deviations from the alternative cohort sub-division in Table 1 emerge.

Tab. 5: Age, period and cohort effects on the frequency of churchgoing in Western Germany (linear cross-classified models with random effects)

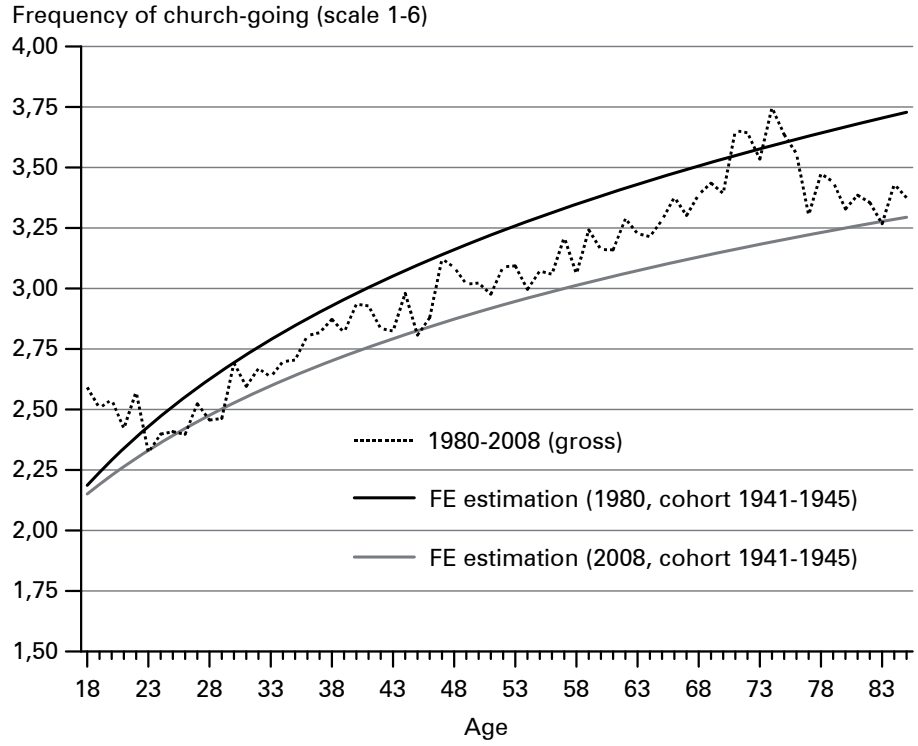
	Model		
	1	2	3
Fixed effects	b-coefficient (t-value)		
Intercept	.35*	1.48***	.38**
	(2.6)	(8.5)	(3.0)
Man	-.25***	-.25***	-.25***
	(-19.6)	(-19.6)	(-19.7)
Age (logarithmised)	.63***	-	-
	(18.3)		
Any religious denomination	1.31***	1.31***	1.31***
	(56.7)	(56.2)	(56.5)
Random effects	Variance components (Wald z-value)		
Intercept period	.010**	.004*	-
	(2.6)	(2.3)	
Intercept cohort	.007*	-	.006*
	(2.3)		(2.1)
Period-age slope	-	-	.381**
			(2.7)
Cohort-age slope	-	.108	-
		(1.6)	
Level 1 residual variance	1.545***	1.546***	1.545***
	(138.4)	(138.3)	(138.4)

Notes: n = 38367; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

Source: Cumulated ALLBUS (1980-2008); own calculations

domly across cohorts or periods, respectively, in Models 2 and 3 ("random slope" model). The cohort-specific variation of the age effect is not significant according to Model 2 in Table 5 ($z = 1.6$). It can however be shown in Model 3 that the strength of the age effect differs significantly between the various survey years ($z = 2.7$). But the random effects model does not reveal whether these period-specific differences follow a monotone time trend. Hence, in Table 6 (Model 2) interaction effects between the age and two continuous indicators for the ongoing number of the cohort, and the time in years since 1980 (period), are calculated. The conditional main effect of age in Model 2 ($b = 0.87$) refers to the year 1994 and the cohort 1941-1945, since a centring was carried out. The interaction effect age × period makes it clear that the age effect falls by a factor of 0.01 with each calendar year since 1980. The corresponding interaction with the cohort has the same algebraic sign, but falls just short of the 5 % significance level.

Fig. 4: Age-related changes of the frequency of churchgoing (women with a denomination in Western Germany)



* FE = Fixed-Effects

Source: Cumulated ALLBUS (1980-2008); own calculations

Figure 4 graphically illustrates the weakening of the age effect on the basis of the predicted values of Model 2 in Table 6. The far ends of the period under observation are compared, namely, the year 1980 is compared to the year 2008. The level of attendance at religious services is fixed on the middle cohort (1941-1945). When comparing both regression curves, especially one difference becomes clear: The regression curve for the year 2008 has a weaker increase than the same curve for the year 1980. The increase in the frequency of churchgoing between the ages of 18 and 85 is roughly 1.5 units on the scale in 1980, whereas in 2008 it is only roughly one unit.

Comparable analyses for Eastern Germany (not shown) lead to the result that no significant age effect on the frequency of churchgoing can be found when controlling for cohort and period effects.

The findings on the religious practice in Western Germany also lead to the result that the frequency of attending religious services falls in the course of the calendar time. This finding, which corresponds to conventional secularisation theories, ex-

Tab. 6: Age, period and cohort effects on the frequency of churchgoing in Western Germany (linear cross-classified models with fixed effects)

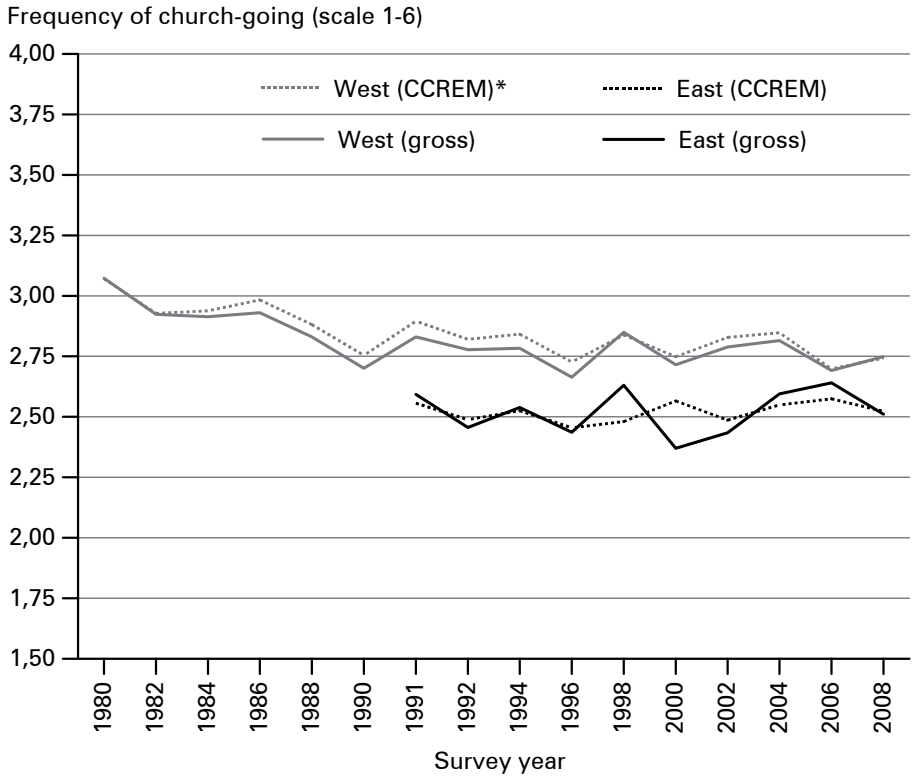
	Model		
	1	2	3
	b-coefficients (t-values)		
Intercept	.14	1.62***	-.71*
	(0.4)	(8.7)	(-2.0)
Man	-.25***	-.25***	-.25***
	(-17.7)	(-17.8)	(-17.9)
Age (logarithmised)	.52***	.87**	.63***
	(8.5)	(3.0)	(6.3)
Any religious denomination	1.33***	1.33***	1.32***
	(60.4)	(60.4)	(59.6)
Period (years since 1980)	-.01**	-.01*	-.01***
	(-3.4)	(2.2)	(-4.2)
5-year cohorts (logarithmised)	-.19**	-.004	-
	(-3.4)	(-0.2)	
Period × age (logarithmised)	-	-.01*	-
		(-2.2)	
(ln)cohort × (ln)age	-	-.02	-
		(-1.8)	
Cohort classification (ref.: 1946-1953)			
Pre-War generation (1895-1921)	-	-	.18*
			(2.2)
War/post-War (1922-1934)	-	-	.11*
			(2.1)
Adenauer-generation (1935-1945)	-	-	.04
			(1.1)
Social movements (1954-1964)	-	-	-.02
			(-0.5)
Generation Golf (1965-1975)	-	-	.06
			(1.1)
Reunification (1976-1990)	-	-	.18*
			(2.0)

Notes: n = 38367; * p ≤ .05; ** p ≤ .01; *** p ≤ .001; the logarithmised age and the period and cohort variables are centred in model 2.

Source: Cumulated ALLBUS (1980-2008); own calculations

presses itself in the fact that a significant variation of the regression constant over the 16 survey times of the ALLBUS can be found in the random effects model. As is confirmed by Model 1 in Table 6, this variation is furthermore based on a highly significant, linear-negative trend (cf. also Fig. 5). By contrast, no significant period

Fig. 5: Frequency of churchgoing across survey years (persons with a denomination)



* CCREM = Cross classified random effects model

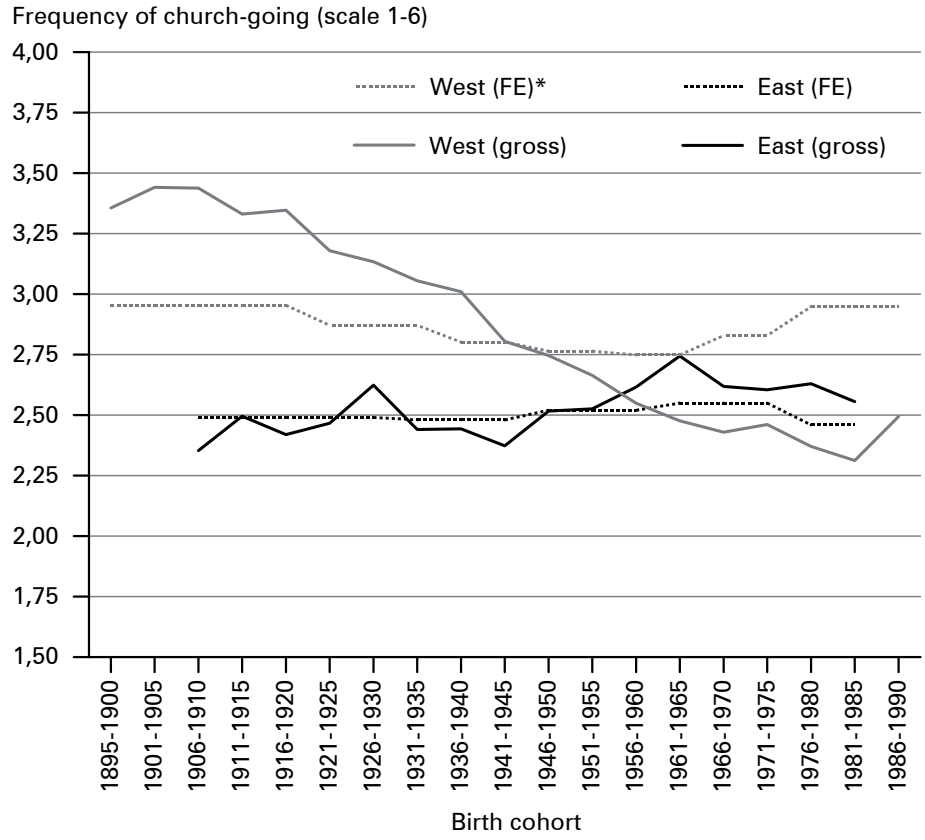
Source: Cumulated ALLBUS (1980-2008); own calculations

effect can be identified in Eastern Germany. The frequency of attendance at religious services is slightly below the Western level, but has been largely at a constant level since 1991 (cf. Fig. 5).

Finally, the question arises to which degree the religious practice in Western and Eastern Germany changes as a result of influences of the birth cohort. The random effects model (Tab. 5, Model 1) initially confirms that the variance of the regression constant is significant over the 19 cohorts, even if only a very small share of the overall variance (< 1 %) is accounted for by cohort effects. It can also be found on the basis of Model 1 in Table 6 that church attendance rates fall with the ongoing number of the cohort (b = -.19).[12] The alternative cohort sub-division, which is

[12] Developments in the number of the cohort are logarithmised in Model 2 (Tab. 6) since this can improve the model adjustment, and the extent of the collinearity between age, period and cohort effects can be reduced to a level within the tolerance limit.

Fig. 6: Frequency of churchgoing across birth cohorts (persons with denomination)



* FE = Fixed-Effects

Source: Cumulated ALLBUS (1980-2008); own calculations

orientated towards characteristic historic periods, however provides further information. Accordingly, the 1946-1953 cohorts ("APO generation") and the 1954-1964 cohort (new social movements) once more show the greatest distance to religion and the church. The frequency of attendance at religious services, by contrast, is significantly higher in the cohorts prior to 1935, and also in the youngest cohort (1976-1990). The cohort classification in Model 3 consequently indicates a u-shaped connection between the cohorts and church attendance. A graphical illustration of the corresponding cohort patterns in Eastern and Western Germany can be found in Figure 6.[13] An upwards movement is suggested for Eastern Germany without

[13] The cohort effects shown here are in turn centred on a median age and the middle of the respective periods under observation.

controlling for age and period effects, which however proves not to be significant in multivariate analyses (not shown in a table). This is also made clear by the horizontal predicted values in Figure 6, which are based on a sub-division into pre- and post-GDR cohorts.

5 Summary and discussion

The starting point of this article was the conclusion that no APC analyses are available so far on the development of church membership and church attendance in the Federal Republic. Accordingly, data from the cumulated ALLBUS in the period under observation 1980-2008 were analysed. The least surprising result of the analyses consists of the influences of the calendar time: The share of church members in Western Germany in the period 1980-2008, and in Eastern Germany in the years 1991-2008, fell continuously. A weakening of religious participation can additionally be observed among Western German respondents since here the frequency of attendance at religious services also reduces with advancing calendar time. Hence, regardless of age and independently of individual cohorts, a secularisation trend continues which started in the 1950s in Eastern Germany, and in the 1960s in Western Germany.

The analyses presented however additionally provide new information on the relative significance of age and cohort influences. Age-specific changes in church membership and in church attendance are ignored either implicitly or explicitly in many previous studies (*Chaves* 1989; *Jagodzinski/Dobbelaere* 1993; *Wolf* 2007; *Voas* 2008). The results of this study indicate that this approach is inappropriate. The probability of church membership increases in Eastern and Western Germany with advancing age, after a temporary drop on the transition from youth to adulthood. Moreover, a monotone-positive age effect on the frequency of churchgoing can be found to exist for Western Germany. The findings hence show on the one hand that the inter-age secularisation trend is counteracted by lifecycle effects. But on the other hand at least for church attendance in Western Germany, it can be shown that the positive influence of age decreases with advancing calendar time. A possible explanation of this result lies in the fact that the relative significance of biographical transitions which have a positive or a negative impact on religiosity has shifted in past decades. One should refer here for instance to the delaying of marriage or the increase of the incidence of non-marital cohabitation. The weakening of the age effect is also to be interpreted as a form of secularisation which has largely remained unobserved so far – even in international research.

As a matter of principle, one may criticise the above analyses of age effects in that they are solely based on trend data. Especially with regard to influences of age, there is hence no possibility to observe the same individual in the course of their ageing process. A comparison between various persons however implies that these individuals differ only by their age, and not with regard to further characteristics which are not observed. The nature of the data inevitably leads to a causal interpretation of the results that remains uncertain. To support the authoritativeness of

the findings, one may refer to the fact that it can also be proven in panel studies (*Lois* 2011; *Argue et al*. 1999) that religiosity increases with rising age and that furthermore the positive age effect becomes weaker as calendar time advances. The results on the age effects hence prove to be robust as against different data sources (SOEP and ALLBUS) and evaluation methods (panel and trend analysis).

With regard to cohort effects, the present studies (e.g. *Jagodzinski/Dobbelaere* 1993; *Wolf* 2007; *Voas* 2008) usually leave the impression that the level of ties to the church and of religious vitality continues to weaken with each passing generation. The analyses presented indicate that these are probably mistaken interpretations caused by the failure to take account of age effects. The influences of the birth cohort, shown when age and period effects are statistically controlled for, tend to be relatively weak. A u-shaped course is shown in Western Germany, in particular with regard to the frequency of churchgoing. The lowest frequency of attending religious services can be observed in the 1946-1953 and 1954-1964 cohorts, who were influenced by the 68 movement and the emergence of the new social movements. The level of religious participation, by contrast, is higher in the older birth cohorts prior to 1934, as well as in the youngest cohort observed (1976-1990).

For the East German birth cohorts 1961-1974 and 1975-1990, who were socialised during the dissolution phase of the GDR and in the period following the political changes, increases in the starting level of church membership are shown. These findings, which indicate a revitalisation of adherence to the church, speak against the irrevocability of forced secularisation and tend to confirm the presumption that the restoration of the religious market after reunification had a positive impact on religious participation. The results are however not suited to confirm the validity of the religious market model since they do not reveal any indications of market mechanisms – such as a wider spread of memberships among various religious communities. For this reason, alternative explanations of the cohort effects mentioned cannot be ruled out. One presumption could be, for instance, that church membership belongs to a greater degree to the normative expectations in unified Germany than it has been the case in the former GDR.

Finally, some restrictions of the presented study should be indicated. With regard to the operationalisation of church membership those persons who in addition to the popular Christian Churches belong to other Christian or other non-Christian religious communities were also counted as church members. This approach may overlook a pluralisation of the religious market. Relevant results on this topic can be found in *Wolf* (1999) and also in many works on the individualisation of religion (cf. *Pickel* 2011: 178-197 for an overview). Moreover, the present study aims to provide basic research, but does not claim to provide explanations beyond this. The goal of the survey was primarily to present a statistically reliable estimate of age, period and cohort effects. The next step consists of a detailed explanation of the effects that have been observed. What is the reason for the increased religiosity across the lifecycle, and why has this age effect weakened in recent decades? Which approaches from the area of the conventional secularisation theories prove to be particularly helpful to explain the negative period effect on church membership and church attendance (cf. on this *Pollack* 2009: 60-104)? Is the low spread of religiosity in the

Western German birth cohort 1946-1953 actually caused by a change in values that is a distancing from values related to obligations and to conformity? Can a restoration of the religious market be made responsible for the religious revitalisation in Eastern Germany which can be observed for the cohorts from 1961 onwards? It was not possible to answer these questions and other "why questions" in the course of this study, and they pose further challenges for future research.

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Translated from the original text by the Federal Institute for Population Research, for information only. The reviewed and author's authorised original article in German is available under the title "Kirchenmitgliedschaft und Kirchgangshäufigkeit im Zeitverlauf – Eine Trendanalyse unter Berücksichtigung von Ost-West-Unterschieden", DOI 10.4232/10.CPoS-2011-04de or URN urn:nbn:de:bib-cpos-2011-04de3, at http://www.comparativepopulationstudies.de.

Date of submission: 14.09.2010 *Date of Acceptance: 28.05.2011*

Dr. Daniel Lois (✉). TU Chemnitz. Institut für Soziologie. Empirische Sozialforschung.
D-09107 Chemnitz, Germany.
E-Mail: daniel.lois@soziologie.tu-chemnitz.de
URL: http://www.tu-chemnitz.de

Comparative Population Studies – Zeitschrift für Bevölkerungswissenschaft

www.comparativepopulationstudies.de

ISSN: 1869-8980 (Print) – 1869-8999 (Internet)

Published by / Herausgegeben von
Prof. Dr. Norbert F. Schneider

Layout and print: Federal Institute for Population Research, Wiesbaden (Germany)

Managing Editor / Redaktion
Frank Swiaczny

Copy Editor / Schlussredaktion
Dr. Evelyn Grünheid