Secuarlisation in Germany : Age, Cohort and Period Effects on Changing Patterns of Religiosity

Abstract

The role of religion in modern societies has been the focus of contentious debate, as social scientists argue whether the importance of religion has faded, remained stable, or grown stronger in the last century (Kaufmann). Much of this discussion has invoked the term 'secularization' either as a description of a social process of rationalization (Inglehart) or as a flawed theory based more on historical fiction than empirical support (Stark). The historical record for tracking changes in religiosity during the latter part of the 20th and early 21st centuries largely relies on survey data such as the General Social Survey (GSS) in the United States and the World Values Survey for international comparisons, but these studies incorporate temporal dimensions on a limited basis with only few observations. In this paper, we compile 40 years of German data to offer a demographic analysis of changes in religiosity through denominational affiliation. These analyses distinguish the relative contributions of age, period and birth cohort to the overall trend of increased secularization.   Our period of study—1969 to 2009—addresses an historical era that straddles the reunification of East and West German states and the fall of the Berlin Wall. Studying social change in the prevalence of reported membership in religious communities provides insight into how organized religion, as a focus of personal identification, shared beliefs, and organizational attachment has shifted in recent years.   We find evidence that all three temporal components make significant contributions to the 40-year trend for western Germany. In contrast, analysis of data for the past 20 years in eastern Germany indicates that cohort differences in religiosity do not persist once age and period differences are taken into account. After decomposing the time trend into age, period and birth cohort components, we discuss how population dynamics as well as political, social and economic factors may have contributed to declines in religious affiliation in Germany, whether some age groups were more likely to be affected than others, and the role of cohort replacement in this dimension of social change.

1

19.07.2010

Introduction

The debate over trends in secularization is as much about changing organizational allegiances as it is about changing belief systems. Researchers disputing claims of unabated secularization have demonstrated broad-based beliefs in an afterlife, a soul, and other tenets central to many religious communities (see e.g., Greely and Hout); however, in other respects, the centrality of participation in religious organizations to these beliefs is unclear. Also unclear is how and why nations may differ in the roles played by religious communities. Attempts to address how people's actions and beliefs are shaped by their religiosity, or lack of it, require measures of adherence to cognitive and behavioral orthodoxies to judge how devoutly and consistently one actually practices a religion. At the organizational level, however, membership in religious communities speaks to a willingness to openly identify with a religious community and, in many cases, to support this community through attendance, service and financial contributions. This type of support allows the religious organization to operate on a larger scale and can translate into social, political and economic power for the religious community. How that power is used can either attract or alienate potential converts, existing members, government officials, and the general populace. In this way, congregations are essentially memberships in voluntary organizations in which the coordination of purposeful action is informed by religious doctrine. Within the political realm, congregations can be mobilized to support or oppose government policies, political candidates, or government appointees on the grounds of their consistency with religious beliefs. In social terms, congregations can create networks of support, referral, or assistance to members as well as attempt to recruit new members. Economically, congregations can boycott, provide financial support, and in other ways contribute to causes and persons whose positions are concordant with their own.

In this study, we are primarily interested in changes in religious organizational affiliation in Germany over the past four decades. We rely on existing theory in religion as well as political

19.07.2010

economy to develop our argument that the history of the church-state relationship is relevant to the stud of religious affiliation. While we have survey information for Western Germany for the full time period, we are limited to post-unification data for Eastern Germany. Given that we use reports of religious affiliation as our measure of religiosity (or no affiliation, as a measure of secularization), this analysis does not speak directly to beliefs systems, per se; rather, we address the fit between organized religions (represented by a widening array of religious communities to which the German people may belong), personal beliefs and people's willingness to publicly and (in most cases) financially support religious institutions. We do not observe changes in personal beliefs that presumably lead to disenchantment with a religious community, thereby prompting disaffiliation. Nor do we observe a development of commonality that would lead to an affirmative act of affiliation. We do assume reported membership in a religious community to be an affirmation of belief; however, since we do not distinguish among the various denominations, the nature of those beliefs remains open. But a growing tendency for people to eschew membership in religious communities does indicate a level of disaffection with and/or independence from religion as a source of identity, a view of key transitions (such as marriage, birth of children, and death) as socially meaningful in the absence of religious ritual, and a decision to withhold financial support from these organizations. Secularization may also be viewed as a widening of the separation between church and state, a growing tendency to ground the legitimacy of political power and the rationale for political actions in something other than theology. In that regard, the experience of eastern Germany is particularly interesting, since the formal separation between east and west and the levels of religious support, or even tolerance, provided within the different state political organizations created a type of quasi-experimental design that allows us to assess how changes in the political economy of religion serves to restructure religious identify.

Secularisation as demographic process

19.07.2010

Any social change or cultural shift in a population can result from demographic factors such as: (1) birth cohort differences coupled with a population change in the composition of birth cohorts; (2) age differences in personal beliefs coupled with population change in age composition: and (3) historical events that motivate changes in beliefs or behaviour across all age groups and all cohorts. Decomposing change into these three temporal components—age, cohort, and period—provides insight into the sources of such change. This decomposition relies on demographic proxies—the age of the respondent, the respondent's year of birth, and the year of the survey—to disentangle the various components. As proxies, these components are open to various interpretations, since age, cohort or period differences can occur for a host of reasons. Within this framework, period effects consist of year-to-year differences that characterize respondents regardless of their age or in what year they were born; age effects reflect differences across age groups (regardless of birth year or in what year the data were collected); and cohort effects reflect differences across people born in different years (regardless of the year of the survey or the respondent's age at interview).

A central problem in the disentangling of age, period and cohort effects through use of these proxies lies in their linear dependence: any given effect is a linear function of the other two components. However, advances in modeling techniques coupled with informational priors will allow us to provide estimates of these different sources of change. A second problem in most APC analyses of this topic is that they rely on relatively short time spans, seldom more than a decade or two (Crockett and Voas 2006, Wolf 2008, Te Grotenhuis et al. 1997). A short observation window implies that one cannot observe more than a fraction of the modern day life span for any birth cohort and can assess only short term modulations, which may or may not persist. Voas (2009) suggests using information on retrospective questions on parental attitudes to lengthen the observation window in Britain, based on the assumption that they a) are correctly reported and b) parents were representative of their cohorts. However, religiosity clearly correlates with childbearing (Berghammer and Phillipov 2007), so being a parent limits observation to a select group, potentially producing biased estimates, which can lead to flawed conclusions.

4

Another approach that has been used to disentangle age, period and cohort influences is to look at theoretical arguments or relevant empirical findings. Voas (2009) investigates whether changes in religiosity are usually conjectured to come about as a result of major life stages such as marriage, raising children, or seeing the end of life approaching, and therefore to be concentrated in particular age ranges, but finds little evidence of such life cycle patterns in religiosity, which argues against an age effect. Also, despite the overall ageing of the population, average levels of religious intensity and affiliation have fallen, which is more compatible with the cohort replacement theory, where the more religious cohorts have been replaced by the more secular ones. Data from Eurobarometer and European value survey find that attendance dropped substantially in every European country during the last three decades of the 20th century (see Norris and Inglehart, 2004). These changes may reflect period effects (affecting all cohorts similarly) rather than generational decline, but in any event they are incompatible with pure age effects. However, even if the overall trend seems inconsistent with hypothesized age effects, all three temporal components of change may be simultaneously shaping behaviour, albeit not necessarily in the same direction, remains a possibility.

As studies in several European countries have demonstrated, changes in religious belief, particularly conversion and secularisation, tend to take place in early adulthood (Voas and Crockett 2005, Crockett and Voas 2006, Wolf 2008, Skirbekk et al. 2008, Te Grotenhuis et al. 1997). During midlife and at older ages, people appear much less likely to switch their religious affiliation or change their level of religiosity. Therefore, evidence of changes in religiosity should be more apparent in comparisons of birth cohorts than in age trajectories. If this framework is correct, societal trends in religiosity should be evident through cohort comparisons, with more recent cohorts being more secular than cohorts born earlier (Voas and Crockett 2005). Using German data from the past 20 years, Wolf (2008) argues that religion is quite stable across adult life; however, cohorts display different levels of religiosity, with more recent cohorts being more secular; however, his analysis does not assess the unique contributions of age, period and cohort to the overall trend.

19.07.2010

A comparative study of West Germany, Austria, the Netherlands, Norway, Ireland, Italy, and Great Britain concluded that the gap between young and old in religiosity results from the tendency of people from earlier cohorts to be more religious than people born in more recent birth cohorts (Te Grotenhuis et al. 1997). Further support for the cohort change hypothesis comes from Spain, where religious change and secularisation is concentrated among young adults (up to the 30s) and then stabilizes, with later born cohorts registering as more secular (Skirbekk et al. 2008).

Why are later born cohorts more secular?

Theories of secularization explain the 1990s doubling of the proportion of Americans who are religiously unaffiliated (7 to 14 percent) as the consequence of ideational and structural changes associated with modernity (Hout and Fischer 2002). In Austria, the proportion without affiliation increased from 0.2 percent 1900 to 4.3% in 1971 and to 12% in 2001, and an increase to 15-25% is expected by 2031 (depending on secularization, migration and fertility patterns).

Early versions of the secularization thesis argued that supernatural religious doctrines lost plausibility with the rise of secular science and learning. Well educated, scientifically informed individuals were believed to favour rationality and logic over religion (Weber, in Gerth and Mills 1946: 155). Therefore, one reason that secularization may differ by cohort is because later born cohorts have been exposed to more years of schooling than earlier cohorts, and this broader-based exposure to secular education could reinforce a rational versus religious approach to explanation. For more than a century, higher levels of education have been associated with lower levels of religiosity at the aggregate level.   For example, in 1860, key countries involved in religious critique were Germany and the US, with average years of schooling estimated to be 5 years, followed by France and the UK, with average education of 4 years (Morrison and Murtin 2009). This trend continues today, where the degree of religious practice is consistently negatively related to school attainment (Glaeser and Sacerdote 2008; Inglehart and Baker 2000). Educational increases tend to

19.07.2010

follow the cohort dimension, where later born more educated cohorts replace less educated cohorts (Lutz et al. 2007).

More schooling is associated with a decreased belief in religious tenets, such as creation, the existence of God, and an afterlife; science provides alternative explanations such as evolution and the Big Bang theory. The modern demands of commerce have undermined the prescription against working on the Sabbath, and the secular state has provided civil counterparts (and, in some cases, replacements) for religious rituals). Additional schooling is associated with higher rates of female labour force participation, decreased fertility, higher career aspirations, and social demands that often compete with participation in religious services.   Nevertheless, Finke and Stark (1992) suggest that for the US, church membership has risen consistently from 17% in 1776 to more than 60% by the end of the 20th century, in spite of the fact that US education levels were rising to one of the highest levels in the world during this same period (Morrison and Murtin 2009). Nevertheless, the negative relationship between education and religiosity has been documented at the individual level as well as the aggregate level.   Chaves (1994) views the decline in religious affiliation as evidence of a significant reduction in religious authority. The role of religion for those born at later periods is more likely to recede over time and be viewed as less important than other aspects of their lives (Bruce 2002: 2-43). Though evidence for secularization is strongest in Western Europe, some researchers also find that recent trends in the United States provide compelling evidence for the theory (Norris and Inglehart 2004: 92-3), although others view the US as an exception to this general trend.

For more recent cohorts, the church appears to be much more limited in its functional roles. Social connections that had developed out of church membership and church attendance, e.g., friendships, romantic partnerships, business networks, now are formed through other social institutions. On the other hand, religion has played an important role in channelling people's fears, grief, and sense of loss into purposeful action, thereby helping them deal with adverse events and providing reassurance in troubling times.   Some studies have argued that the strong decline in

religiosity in Europe can be attributed to the more limited number of religious communities competing for membership (Stark and Iannaccone 1994). Whereas people in the United States can choose from a wide array of religious communities and services, European countries are more closely tied with historically prominent religions, although religious pluralism has been increasing there, too. Greater pluralism may allow religious institutions to remain competitive, thereby retaining 'market share' at a time when people can choose from a large number of alternative non-religious activities.

Setting the Historical Context of Religion in Germany

In Germany as in other European countries, religious affiliation was historically tied to place of residence, with the relationship between the head of state and the pope, as head of the Catholic Church, being an uneasy one. Martin Luther's challenge to the Catholic Church in 1517 led to the "territorial princes"being allowed freedom of religion in 1555 through the Peace of Augsburg, which effectively shifted the region from one that was uniformly Roman Catholic to one divided between German Catholic (generally in the south) and Protestant (in the north and northeast) regions. Not until 1871 was freedom of religion for individuals recognized, providing religious emancipation for adherents to both Christian and non-Christian religions; however, a Kulturkampf fueled conflict over the connection between 'true' German ethnicity and religious identification. Policies enacted during the 1870s by Chancellor Bismark have been described as a war against the Catholic Church (Gross 2004) and as Bismark's attempt to reduce the political influence of the Roman Catholic Church and establish the ruling authority of the secular state in response to the doctrine of paper infallibility issued by the First Vatican Council in 1870[1] During this period, clergy who preached politics could be imprisoned, religious schools were subjected to government inspections, religious teachers were excluded from positions in the public schools, the Jesuits were banned, diplomatic

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[1] Disagreement over this doctrine created a schism in the catholic church and led to the formation of the independent Old Catholic Church in Germany ("Old Catholic Conference". Oldcatholichistory.org. http://www.oldcatholichistory.org/pages/documents/Dollinger.html. Retrieved 2010-04-25.).

19.07.2010

relations with the Vatican were discontinued, and state subsidies to the Catholic church were ended. The state also took over certain functions that had been performed by the church, such as the training and appointment of clergy, and defined marriage as a 'civil' matter, moving the authority for the ritual to the state. A political challenge from the Catholic Center Party that led to large gains in the 1878 elections purportedly convinced Bismark to moderate his position and allow many of these laws to be quietly repealed (Wallace 1948). Anti-Jewish sentiment continued to build through this period as well. Although political supporters of the völkisch movement were not successful in revoking Jewish emancipation, the antagonism remained (Meyer 1997).

[Figure 1 about here]

Figure 1 provides a timeline for potential period and cohort effects and includes some of the key events that shaped religious organizations and their memberships. The system of state churches disappeared in 1919 (in the aftermath of World War I) under the constitution of the Weimar republic, which codified the separation of church and state and established freedom of religion as a civil right. Religious associations were deemed legal entities subject to public law. Following the example of Switzerland (1920), the territorially distinct German Protestant churches formed a loose federation of independent churches, known as the Deutscher Evangelischer Kirchenbund, in 1922. The establishment of the Third Reich in 1933 destroyed the prevailing church-state accord and ultimately decimated the Jewish population. The Deutsche Evangelishche Kirche (the German Evangelical Church, also known as the Protestant Reich Church) was established, thereby creating a unified state church consistent with the socio-political agenda of Nazism. This unified 'Christian' Church was governed by a single bishop (*Reichsbischof*) who answered to the führer. Church teachings were perverted to support the notion of 'racial purity' (Mottmann 1986:112). Those opposed to unification worked to establish independent synods under the name Confessing Church. Laws used to discriminate against Jews were promulgated in 1933, with persecution and ultimately genocide soon thereafter. The number of Germans disaffiliating from both the Catholic and the

Protestant churches was atypically high during 1932-45; the numbers peaked in 1939 when almost half a million people left the church (Steigmann-Gall 2007; Granzow et al 2006). After the war ended, a new umbrella organization, the Evangelical Church of Germany, was founded to replace both the Protestant Reich Church and the Confessing Church.

After 1949, Germany was officially divided into the Federal Republic of Germany (in the West) and the German Democratic Republic (in the East). While West Germany reestablished freedom of religion in the *Grundgesetz*, the circumstances for those in East Germany were not so clear cut. The church continued to provide a basis for shared German identity and cultural unification. Although East Germany officially claimed to offer religious freedom, those who openly participated in religious activities faced sanctions that ranged from repression and discrimination to imprisonment. GDR leaders searched for ways to develop a distinctly East German cultural identity. The building of the Berlin Wall in 1961 reinforced the separation in both practical and symbolic terms. During Brandt's Chancellorship of FRG, the relationship between East and West Germany improved. His agenda for domestic reform made him popular among students and members of West Germany's baby boom cohorts. As was the case in the US, in the 1960s West Germany experienced a youth movement, which was characterized by student protests, generational tensions, and peace movement.

Before 1968, Lutheran churches in East Germany had not formally separated from those in West Germany, but what had been a loose and often difficult relationship was ended when East German churches established their own Federation of Evangelical Churches in the German Democratic Republic (BEK). In spite of state attempts to reduce the influence of the church and usurp many of the functions performed by the church, church-run charities operated openly through most of the East German period. Nevertheless, East German authorities, lead by *SED (Sozialistische Einheitspartei Deutschlands)*, tried to reduce the influence of the church and reduce membership, through strict regulations limiting church activity in the 1950s in particular. Importantly, they effectively reduced religious activities especially in younger age groups, which in the longer term

19.07.2010

may have allowed cohort replacement to reduce the religious share of the population. During the 1970s, church-state tensions in East Germany were somewhat relaxed, new church construction was permitted, and religious programs were aired. During the 1980s, the involvement of the Lutheran Church with the peace movement combined with a push for human rights and against nuclear power resulted in a somewhat renewed public interest in church membership. After German reunification in 1990, the constitutional provisions that had characterized West Germany were uniformly in place.

These historical changes in organizational structure provide context for changes in religiosity. For example, during periods of heightened tension between governments and religious communities, members may choose to disaffiliate out of fear, because they want to register dissatisfaction with the position taken by the religious hierarchy or support political leaders, or because they choose to affiliate with a different religion. Changes in religious leadership (e.g., the introduction of the Protestant Reich Church), changes in church approved or church sanctioned behavior (e.g., papal edicts) or abuse cases (e.g., some of which took were revealed in Germany in the late 2000s) can also motivate some people to leave the church. In addition, this timeline provides us with the social context during which new birth cohorts came of age, the conditions under which their world view was being formed.

Research Design

Demographic indicators of religious identity (whether one self defines as members of a church or religious group) and participation in rituals, e.g., church attendance, are often associated with being a member-in-good standing of such voluntary organizations. Because they reference either identity or behavior, they do not directly assess people's belief systems, whether they adhere to certain orthodox views, or whether their behaviors in other spheres of their lives are consistent with church teachings. As such, they provide limited insight into changes in faith, or into acceptance of certain core Christian beliefs, such as the existence of heaven and hell, the virgin birth, and the resurrection. They do, however, allow us a window on whether and how religion as a social institution is

19.07.2010

implicated in self concept and daily routines, either through attendance of religious services or through the act of prayer. In contrast, denomination membership is primarily an indication of organizational support. Although it seems reasonable to assume that people belong to organizations that reflect their beliefs, with regard to religious communities, membership may not be a good indicator of religiosity (Davie 1994). However, in Germany membership in religious organizations has concrete financial implications as well, at least for the larger religious groups, so people who do hold membership must believe they benefit in some way.

Using survey information from 1969 through 2009, we examine overtime patterns in denominational membership in Germany. Our analysis allows us to account for time trends on the basis of age, period and cohort effects. We combine data from 17 separate national surveys to construct the longest possible time frame for analysis. Surveys that contribute observations to these analyses include: German General Social Survey, Eurobarometers I-IV, International Social Survey Programme, European Values Study, German Election Studies, German Politbarometer, German National Election Study, World Values Survey, European Social Survey, Political Attitudes, and Political Participation and Voter Conduct in United Germany. Appendix A reports the number of observations by year by survey and their proportional contribution to our total sample size of 308,895 person observations. These respondents ranged in age from 18 to 100[2] and were born from 1890 through 1991. Our information provides pre- and post-unification information for the former West Germany and post-unification information only for the former East Germany. We perform our analysis separately for the west (1969-2009)[3], the east (1990-2009) and unified Germany (1990-2009) to address this redefinition of national boundaries in the middle of our time period. All survey responses were weighted appropriately for these separate analyses.

Dependent Variable. We use denominational membership (DM) as our indicator of religiosity. Appendix B reports the wording of the questions from the different surveys we used for

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[2] Although some of the surveys included respondents as young as age 14, we chose to use age 18 as our minimum.
[3] During this 41 year period, we were able to find survey information for 38 years. The three years without data are 1970, 1971 and 1974.

19.07.2010

this analysis. The information about membership in a religious community was collected by two sorts of questions: (1) those asking whether the respondent 'belongs to' a religion, a religious group or a religious denomination; (2) those asking 'what is' your 'religion.'

Modeling Strategy

The fundamental identification issue that complicates the estimation of APC models lies in the linear dependency among age, period and cohort when the same time interval is used for all indicators. For example, if period is annualized, age is measured in years, and cohort is referenced by birth year, Period=Age+Cohort. Finessing this problem requires invoking some constraints. Given access to the person-based observations offered by repeated cross-sectional surveys, the APC model can be addressed through multi-level modeling techniques(Yang and Land 2006). With this approach, we distinguish between fixed effects and random effects for our predictors, beginning with a basic logit model that specifies only period effects so we can track the time trend. We then extend this model to include information on birth cohort to assess the extent to which cohort differences in religiosity and population differences in cohort structure contributed to this time trend. We specify both period and cohort as random effects, as in:

$$No\ Religious\ Affiliation\ (NRA)\ =\ \gamma_0 + u_{0j} + v_{0k} + e_{ijk} \qquad \text{[Eq. 1]}$$

where i = 1, 2, . . . , n_{jk} persons within birth cohort j and survey year k; j = 1, . . . , 22 for each of 22 5-year birth cohorts (<1890 through 1990-94); and k= 1, . . . , 38 survey years, for each of 38 surveys (1969 through 2009); within each birth cohort j and survey year k, each person i's religious affiliation, coded '1' if they report no religious affiliation and '0' if they report membership in any religious community. In the above equation (which corresponds to Model 2 in Tables 2 and 3), no religious affiliation is specified as a function of year and birth cohort such that: γ_0 is the log-odds of a secular self report estimated for all persons in all cohorts in all survey years; u_{0j} is the random effect of cohort j averaged across all survey years; and v_{0k} is the random effect of period k averaged across all birth cohorts.

19.07.2010

In subsequent models, we estimate fixed effects for age (mean centered, as a quadratic), gender (coded '0' for women, '1' for men) and education (coded '0' for no more than primary schooling; "1" for primary or tertiary schooling) by adding BXi_k to equation 1, where X_{ik} includes additional demographic information about respondents and B is a vector of coefficients. Our assumption is that, once any cohort or period effects are controlled, the predicted log-odds of NRA varies only by the demographic.

Figure 2 displays the data for Germany from 1969 to 2009, with the proportion reporting no religious affiliation on the y-axis and survey year on the x-axis. Separate lines illustrate the different observations, over time, for 5-year birth cohorts that range from the cohort born 1900-04 to the cohort born during the 1975-79 period. The fragments of these cohort lines represent different age ranges for each cohort, with more recent cohorts being observed at younger ages and more distant cohorts observed only at older ages. We also indicate on the graph information from before and after German reunification. Prior to 1990, data are from West Germany only, whereas from 1990 onward, observations are from respondents living in the former East Germany as well. Although the estimates after reunification clearly show higher levels of secularism, more recent cohorts of younger aged people are also trending toward higher levels of secularism.

Results for APC Models

Western Germany. Results for analyses of West Germany are reported in Table 2. Estimates for model 1, which is a random intercept model that allows the predicted log-odds of reporting denominational membership to vary as a function of survey year can be found in the first column. Negative coefficients are associated with a higher likelihood of religious affiliation. The estimated constant reports the log-odds of denominational affiliation averaged across all respondents. Figure 2 translates these results into graphic from to demonstrate the time trend, which reflects an accelerating erosion of denominational membership during the past 40 years, with the shift in sign occurring in 1990, the year of reunification. Although an exponential trend line fits the data quite well, a few observations are unusual. For example, the rate of nonaffiliation jumps in 1997, turns

negative in 1999, and then jumps again in 2003 and 2007. With the exception of the 1999 value, the signs are consistently negative from 1969 to 1989 and consistently positive from 1990 forward.

Model 2 estimates the joint distribution for year and birth cohort. Coefficient estimates for years show little change, although the negative effect for 1999 is no longer significant. In contrast to year, the signs for the birth cohort coefficients alternate from negative to positive, with significant negative (less secular) coefficients characteristic of birth cohorts born at the end of the 19th century, shifting to positive (more secular) for the next 3 cohorts, switching again to negative for birth cohorts born in the 1960s, and then staying positive for more recent cohorts. The most secular birth cohorts (those with the largest positive coefficients) are those born from 1900 to 1914 (before World War I) and 1955-1959.

Model 3 adds fixed effects for mean-centered age, which is included as a quadratic function (which offers a better fit than a linear age function). Denomination membership is least likely in midlife at slightly older than mean age—about age 50. Both younger and older respondents are more likely to have an affiliation with a religious group. Once we include age difference in the equation, the coefficient pattern for survey year remains unchanged. The coefficient pattern for birth cohorts is also largely consistent with what we reported for model 2, with the following exceptions: (1) the coefficient for the 1935-39 birth cohort is no longer positive nor significant; (2) the coefficient for the 1925-29 through 1950-54 cohorts are now negative, and three of them are significant, indicating a higher likelihood of no affiliation for these cohorts; (3) coefficients for the 1970-74 through 1990-94 cohorts are positive, significant and peak for the 1985-89 cohort.

Model 4 adds a dummy variable for sex and a dummy for education. Both women and those with less education are more likely to report religious membership, with gender being the stronger predictor. More educated respondents are 2.5 times as likely as less educated respondents to report no affiliation with a religious community, and men are 13.5 times more likely to be nonmembers than are women. That the coefficients for year and cohort are the same once these additional demographic variables are added to the model demonstrates that cohort

15

differences in religious membership persist once cohort differences in education and gender are controlled, with one exception. The 1985 to 1989 cohort is now significantly more secular than cohorts born before or after.   Aside from this cohort, we see that the cohort differences in rates of secularization are neither a function of cohort differences in educational attainment, nor are they a function of any shift in the population gender ratio. Further, the difference in the likelihood of membership by gender does not change once education is controlled, suggesting that the gender difference is not a function of differential education between men and women.[4]

The final model we present for the West, Model 6, tests for gender-specific effects of education and age. Only the gender difference in the linear age term is presented, since no gender difference in the quadratic term was found.   The level of education makes a much more substantial difference in the likelihood of religious membership among women than among men.   Women with more education are 3.5 times as likely as more educated men to have membership, whereas less education women are 54 times as likely as less educated men to be members of a religious community. The relationship between age and membership is also somewhat different for men compared to women. Age differences in the likelihood of religious affiliation are more pronounced for men than for women, and the age curve for men is offset to the right that for women as Figure 4 indicates. The likelihood of religious affiliation is lowest for women at approximately age 52, for men at about age 57.

In this final model, the period and cohort differences are as we described earlier. From 1969 through 1988, all but one significant coefficient is negative, indicating a higher than average likelihood of religious affiliation. The exception is 1985, which is associated with a positive and significant coefficient, which indicates that the trend toward secularization spiked in 1985. From 1989 through 2009, all significant coefficients are positive—again with one exception. The coefficient for 1999 is significant and negative, suggesting an episodic reduction in the rate of secularization. Significant coefficients for birth cohorts are for the most part negative for cohorts

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[4] The model results that support this conclusion are not reported in the table. The coefficient for gender is -1.14 when the education variable is excluded versus -1.13 with education controlled.

19.07.2010

born before 1950 and positive for cohort born in or after 1955. The 1900-1904 cohort is the early

exception, with a significant positive coefficient, indicating that people born at the turn of the 20th

century were unusually likely to eschew religious affiliation.

Eastern Germany. The same series of models was estimated for the region that was

formerly East Germany; results are reported in Table 3. During this more limited time period (since

reunification), significant annual departures from the norm occurred in four years: 1991 and 2002

showed some resurgence in religious affiliation; 1995 and 2004 showed small spikes in

secularization. Figure 5 illustrates this pattern. Once birth cohorts are added, annualized

coefficients continue to show this alternating pattern, but with a bit more consistency. From 1990

through 1995, positive coefficients demonstrate a higher prevalence of secular behavior, with 1990,

1994 and 1995 anchoring this pattern. During 2002 and 2003, significant negative coefficients show

a resurgence of religious affiliation, a pattern reversed in 2004, but then reestablished in 2005 and

subsequent years. Respondents born from 1900 through 1924 have higher rates of membership,

and all those born from 1950 through the early 1990s have significantly lower rates of affiliation.

Unlike the West, the effect of age is increasingly negative. In other words, those most likely

to report no affiliation are the youngest respondents. The likelihood of membership increases with

respondent age: the older the respondent the more likely he or she is affiliated, as depicted in

Figure 6. For women, secularism peaks about age 19, whereas for men, the peak is close to age 28,

almost a decade later. Once age is included in the model, the positive annual differences are largely

accounted for (except of 2004 and 2008), and significant negative coefficients are reduced to three

(1991, 1992 and 2002). This pattern is sustained in subsequent models, with the exception of the

coefficient for 2008. Further, birth cohort differences are largely eliminated: only those born in the

early 1960s are unusually likely to be secular, but even this difference is apparently due to cohort

differences in education; although the coefficient remains positive, it is no longer significant once

education is included as a predictor. Similar to the west, women and those with less education are

more likely members of religious organizations: women are twice as likely as men and the less

19.07.2010

educated are 1.6 times as likely as the more educated to be affiliated. Unlike in the west, the

educational differences in affiliation are the same for men and women.

Discussion

In a country such as Germany, where the overlap of religion and the state has been used historically

to reward or persecute, depending on the ruler's disposition, the trend has been toward a ttempts

to separate the political from the religious. Having had the constitutional right to freedom of and

from religion for less than a century, the experiences of the German people differ significantly by

birth cohort. Couple that history with the political division of east and west, the national socialist

'experiment,' and the role the church has played in maintaining a cultural connection during this

enforced division, and the picture becomes more complicated. Finally, the corporate status of major

religions and the financial provision of the 'church' tax make religious affiliation a mandatory

deduction in earnings for those who choose membership. Although the amount may be relatively

small (less than 2 percent of gross earnings), the connection between affiliation and financial

support is less flexible than in countries such as the US, where the separation of church and state,

the refusal to name a state religion, and the secular nature of schooling were among the founding

principles. Only in the 1950s, as the US experienced its own version of the 'red' scare, were the

national motto and pledge revised to include mention of God.

The temporal dimensions evident for western Germany indicate the historical shifts

toward secularization around the year of reunification as well as somewhat different age

trajectories for men and women that reflect the greater religiosity of women. The birth

cohort patterns show a more secular pattern for those entering early adulthood when the

constitutional change occurred in 1920, during the 1950s at the height of the cold war and

when fear of nuclear war was growing, and from the 1970s onward. The absence of cohort

differences in eastern Germany, the post reunification (1991-92) period effects, and the

stronger association with age demonstrate how a change in government attitude toward

19.07.2010

religion can override early effects of socialization and family practice. In general, both sets

of findings appear to illustrate how connected religious practice is to strategies of

government support/tolerance for either religiosity or its absence versus government

policies that actively offer secular substitutes for religious practice and assign strong

penalties to public expressions of religiosity.

[Explain colour coding]

Table 1. Results from Multilevel Logistic Models Predicting No Religious Affiliation in West Germany						
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
age			0.007	0.0144	0.0189	0.0392
age*sex (0)						-0.0211
age^2			-0.002	-0.0018	-0.0019	-0.0021
sex (0)				-1.1444	-1.1308	-0.5448
sex*educ (0,1)						-1.1922
educ					-0.3968	-0.045
intercept	-2.2002	-2.7688	-1.6656	-1.2757	-1.1572	-1.2622
period						
1969	-1.5988	-1.7498	-2.2421	-2.0441	-1.654	-1.3543
1972	-0.8672	-1.0051	-1.3359	-1.1577	-0.9248	-0.7096
1973	-0.7345	-0.8866	-0.9847	0.9061	-0.7385	-0.5292
1975	-0.142	-0.3099	-0.3407	-0.2106	-0.0815	0.1034
1976	-0.3297	-0.5114	-0.561	-0.4502	-0.2639	-0.06
1977	-0.7296	-0.8987	-0.9289	-0.8407	-0.6415	-0.4463
1978	-0.8256	-0.9787	-0.9676	-0.8994	-0.7061	-0.5327
1979	-0.845	-1.0003	-0.9361	-0.8786	-0.6879	-0.5234
1980	-0.7999	-0.9353	-0.8308	-0.7969	-0.6223	-0.4628
1981	-0.6676	-0.7717	-0.6383	-0.5961	-0.5054	-0.3418
1982	-0.5707	-0.6593	-0.5069	-0.4781	-0.311	-0.1628
1983	-0.7384	-0.8125	-0.6487	-0.6277	-0.4677	-0.3321
1984	-0.5646	-0.6042	-0.4247	-0.4223	-0.2796	-0.1652
1985	-0.0602	-0.0498	0.1403	0.1018	0.2158	0.316
1986	-0.5449	-0.5275	-0.3376	-0.3524	-0.229	-0.1416
1987	-0.5401	-0.5132	-0.3248	-0.3349	-0.1989	-0.1191
1988	-0.3866	-0.5539	-0.3562	-0.3774	-0.3266	-0.28
1989	-0.1131	-0.053	0.1013	0.0907	0.1451	0.1839
1990	0.0078	0.0701	0.236	0.2118	0.2724	0.2688
1991	0.0415	0.1366	0.2755	0.2358	0.2896	0.2788
1992	0.2422	0.3048	0.4632	0.4388	0.4713	0.453
1993	0.3841	0.4609	0.6217	0.5978	0.5869	0.5569
1994	0.2451	0.3204	0.4165	0.3564	0.3995	0.351
1995	0.3889	0.461	0.5905	0.5362	0.5293	0.4642
1996	0.4194	0.524	0.567	0.4879	0.546	0.4615
1997	0.7164	0.8538	0.8542	0.8258	0.8151	0.6914
1998	0.3301	0.4133	0.448	0.3861	0.408	0.2886
1999	-0.2755	-0.2115	-0.2342	-0.2702	-0.257	-0.4161
2000	0.3009	0.3821	0.343	0.2852	0.3349	0.1729
2001	0.5231	0.6381	0.566	0.4887	0.487	0.3379
2002	0.451	0.552	0.4739	0.4082	0.3951	0.2133

19.07.2010

2003	1.249	1.3894	1.2652	1.2451	0.3228	0.1173
2004	0.9641	1.0531	0.8822	0.8357	0.8534	0.6088
2005	0.5994	0.67	0.5243	0.4504	0.409	0.1644
2006	0.9276	1.0096	0.8345	0.7755	0.4434	0.168
2007	1.8272	1.9639	1.7083	1.7472	0	0
2008	0.8438	0.9067	0.6572	0.5793	0.5163	0.2249
2009	0.8721	0.9229	0.6304	0.5598	0.4546	0.1519
cohorts						
<1890		-0.8122	0.8806	0.3788	0.2823	-0.2522
1890-94		-5.0404	-2.6989	-2.5971	-2.5713	-1.9085
1895-99		-5.3406	-3.7954	-4.2267	-4.2998	-4.934
1900-04		1.4299	2.3644	2.0063	1.7743	1.3854
1905-09		1.0681	1.4385	1.0835	0.9534	0.4679
1910-14		1.3411	1.1498	1.0603	0.9353	0.5924
1915-19		0.1328	-0.4309	-0.543	-0.6632	-1.0316
1920-24		0.5666	-0.3467	-0.4124	-0.4444	-0.8299
1925-29		0.306	-0.8334	-0.8988	-0.8691	-1.2243
1930-34		0.6047	-0.6566	-0.5912	-0.5735	-0.8538
1935-49		0.8939	-0.399	-0.2134	-0.1498	-0.3915
1940-44		0.3876	-0.8451	-0.7042	-0.7081	-0.8343
1945-49		0.5312	-0.5353	-0.4764	-0.4573	-0.4789
1950-54		0.6725	-0.1201	0.0242	0.0272	0.1605
1955-59		1.0417	0.6249	0.7735	0.8041	0.9234
1960-64		-0.6614	-0.651	-0.6232	-0.6035	-0.3104
1965-69		-0.8793	-0.4629	-0.3624	-0.3105	-0.0029
1970-74		0.6998	0.59	0.8036	0.8871	12.559
1975-79		0.5951	0.7157	0.9415	1.0085	1.4499
1980-84		0.6937	1.1216	1.3331	1.4033	1.9344
1985-89		0.8927	1.6203	0.17873	1.9268	2.5805
1990-94		0.8764	1.2695	1.4567	1.6481	2.3319

Table note: significant negative coefficients are colored peach; significant positive coefficients are colored yellow; coefficients in clear cells were not statistically significant at conventional levels.

19.07.2010

Table 2. Results from Multilevel Logistic Models Predicting No Religious Affiliation in East Germany		Model 1	Model 2	Model 3	Model4	Model 5	Model 6
age				-0.0261	-0.0254	-0.0248	
age*sex (0)							-0.0294
age*sex (1)							-0.0195
age^2				-0.0005	-0.0005	-0.0005	-0.0005
sex (0)					-0.3528	-0.3219	-0.3064
educ (1)						-0.2073	-0.1949
intercept		0.8143	0.4663	0.9652	1.1425	1.2149	1.2024
Period	1990	0.0714	0.2306	0.0212	0.0294	0.0442	0.0469
	1991	-0.0907	0.0218	-0.1908	-0.1869	-0.1674	-0.1736
	1992	-0.0601	0.0382	-0.138	-0.1327	-0.1187	-0.1204
	1993	0.0394	0.1291	-0.0111	-0.0034	-0.0019	-0.0016
	1994	-0.0007	0.0978	-0.0314	-0.0257	-0.0074	-0.0058
	1995	0.0975	0.1521	0.0574	0.0639	0.056	0.0588
	1996	-0.0776	-0.0185	-0.0858	-0.083	-0.058	-0.0577
	1997	0.012	0.0208	-0.0056	-0.0015	-0.0135	-0.0089
	1998	-0.0239	-0.0187	-0.0483	-0.044	-0.0375	-0.0359
	1999	0	0	0	0	0	0
	2000	0.0456	0.071	0.0914	0.0897	0.1102	0.1103
	2001	0	0	0	0	0	0
	2002	-0.1622	-0.2617	-0.1939	-0.194	-0.1912	-0.1957
	2003	-0.0472	-0.1242	-0.0343	-0.041	0	0
	2004	0.1637	0.1216	0.2526	0.242	0.2576	0.2551
	2005	0.0497	-0.0351	0.0947	0.091	0.0802	0.0821
	2006	-0.0113	-0.1149	0.0569	0.0533	0.034	0.032
	2007	0.0383	0.0031	0.0712	0.0615	dropped	dropped
	2008	0.0022	-0.0962	0.1345	0.1206	0.0808	0.0787
	2009	-0.046	-0.2168	-0.0406	-0.0393	-0.0674	-0.0645
Cohort	1895-99		-0.7227	-0.0014	-0.0018	-0.0005	-0.0005
	1900-04		-1.966	-0.0119	-0.0123	-0.0036	-0.0029
	1905-09		-1.2627	0.0019	0.0013	0.0003	0.0022
	1910-14		-1.2785	-0.0379	-0.0382	-0.0109	-0.0084
	1915-19		-0.9528	-0.0166	-0.0156	-0.0112	-0.0087
	1920-24		-0.7066	-0.0403	-0.035	-0.0082	-0.0055
	1925-29		-0.3985	0.0048	0.0093	0.0043	0.0043
	1930-34		-0.1027	0.0592	0.0542	0.0445	0.0362
	1935-49		-0.0257	-0.0212	-0.024	-0.0022	-0.0033
	1940-44		0.1274	-0.0334	-0.0407	-0.0215	-0.0204
	1945-49		0.3966	0.0332	0.0271	0.0004	0
	1950-54		0.4983	0.0128	0.0143	-0.0212	-0.018
	1955-59		0.69	0.0653	0.0685	0.0144	0.0131
	1960-64		0.8129	0.087	0.0943	0.0321	0.0282
	1965-69		0.7854	0.0216	0.0271	0.0018	0.0011

19.07.2010

1970-74		0.7812	-0.0094	-0.0072	-0.0066	-0.0069
1975-79		0.6827	-0.0607	-0.066	-0.0203	-0.0156
1980-84		0.9495	0.0075	0.009	0.0124	0.0099
1985-89		0.9444	-0.0371	-0.0374	0.0026	0.0019
1990-94		0.7477	-0.0233	-0.027	-0.009	-0.0068

19.07.2010

Figure 1. Proportion of the population reporting no religious affiation in West Germany by cohort by year.

19.07.2010

Figure 2. Timeline

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Age 90

Age 70

Age 50

Euro replaces
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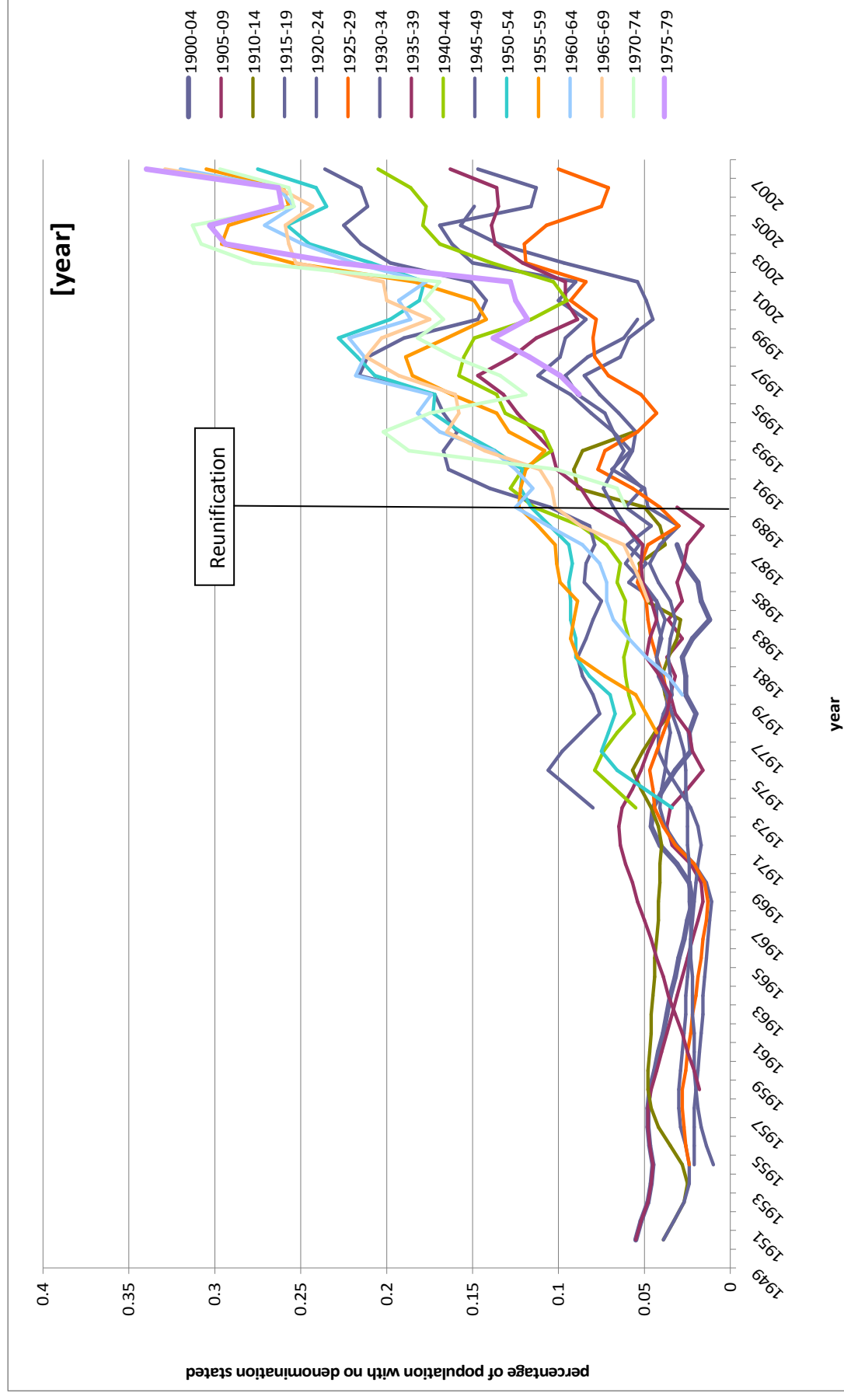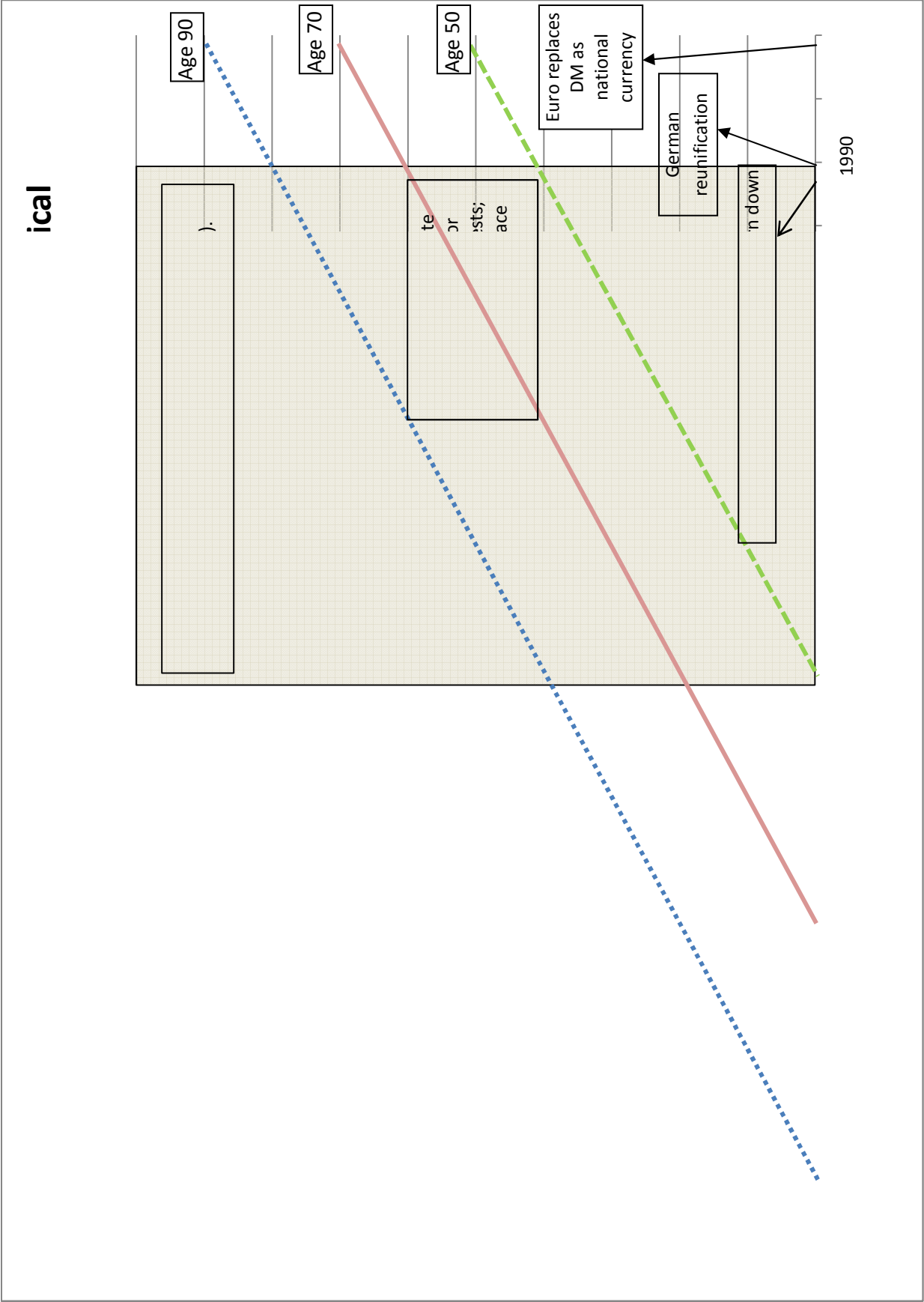currency

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Figure 3:Observed and Predicted Proportions of Respondents Reporting No Denominational Membership, 1969-2009

$y = 0.0358e^{0.0512x}$
$R^2 = 0.8084$

26

19.07.2010
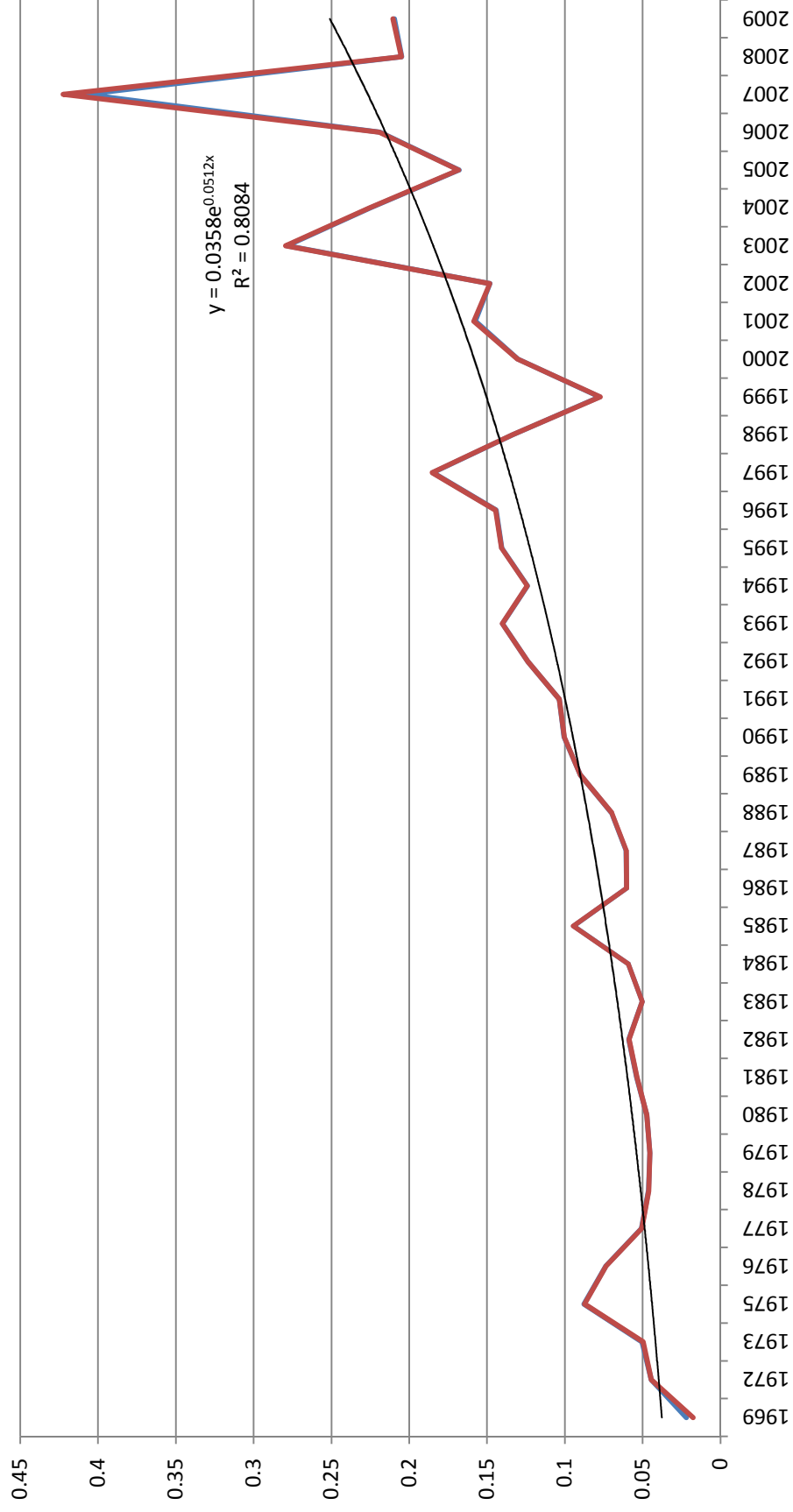
Figure 4. Probability of No Affiliation for West Germans, 1969-2009, by Gender, Age and Education

men with more than primary education
men with primary education or less
women with more than primary education
women with primary education or less

27

19.07.2010
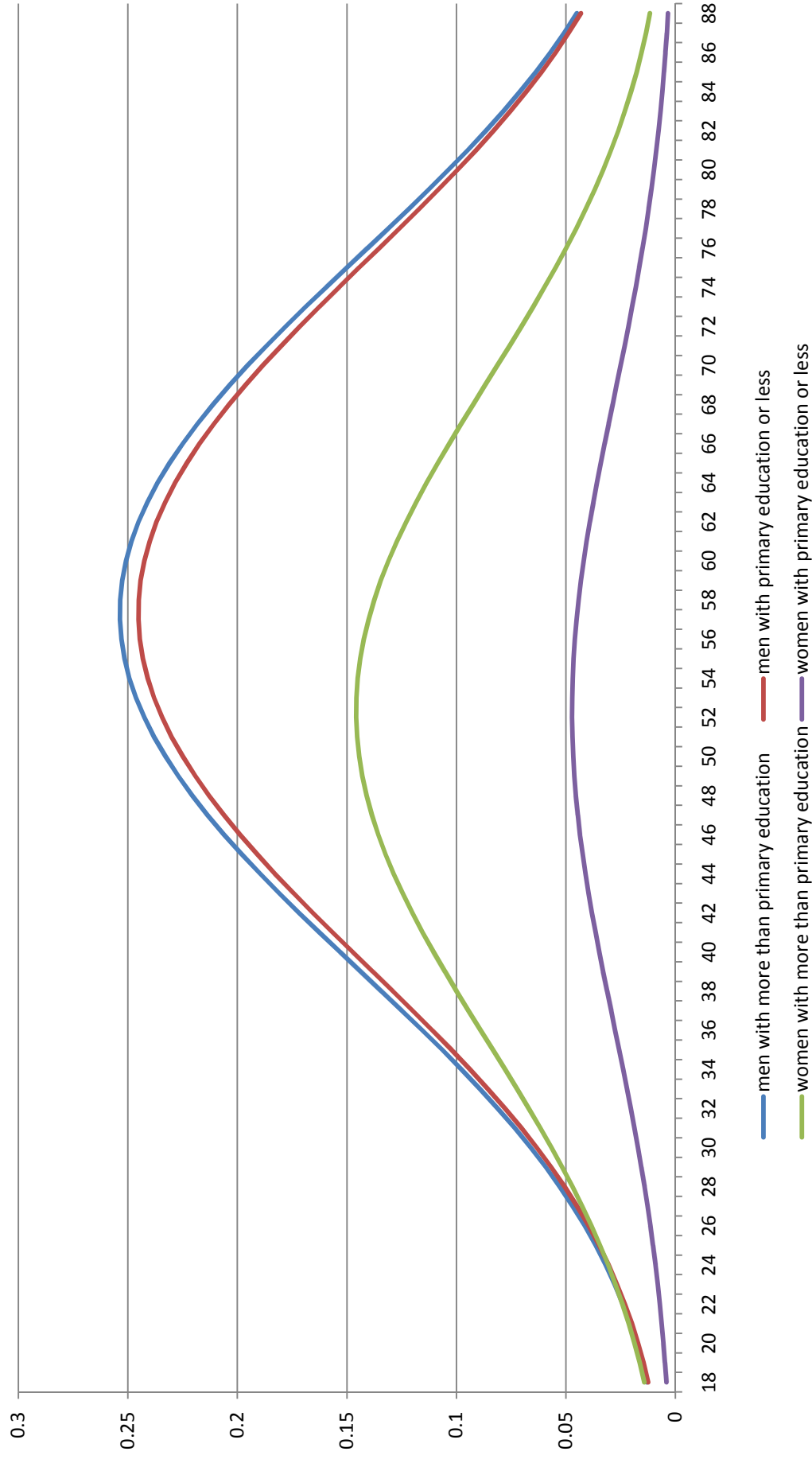
Probability of No Affiliation, East, 1990-2009 (Model 1, Table 2)
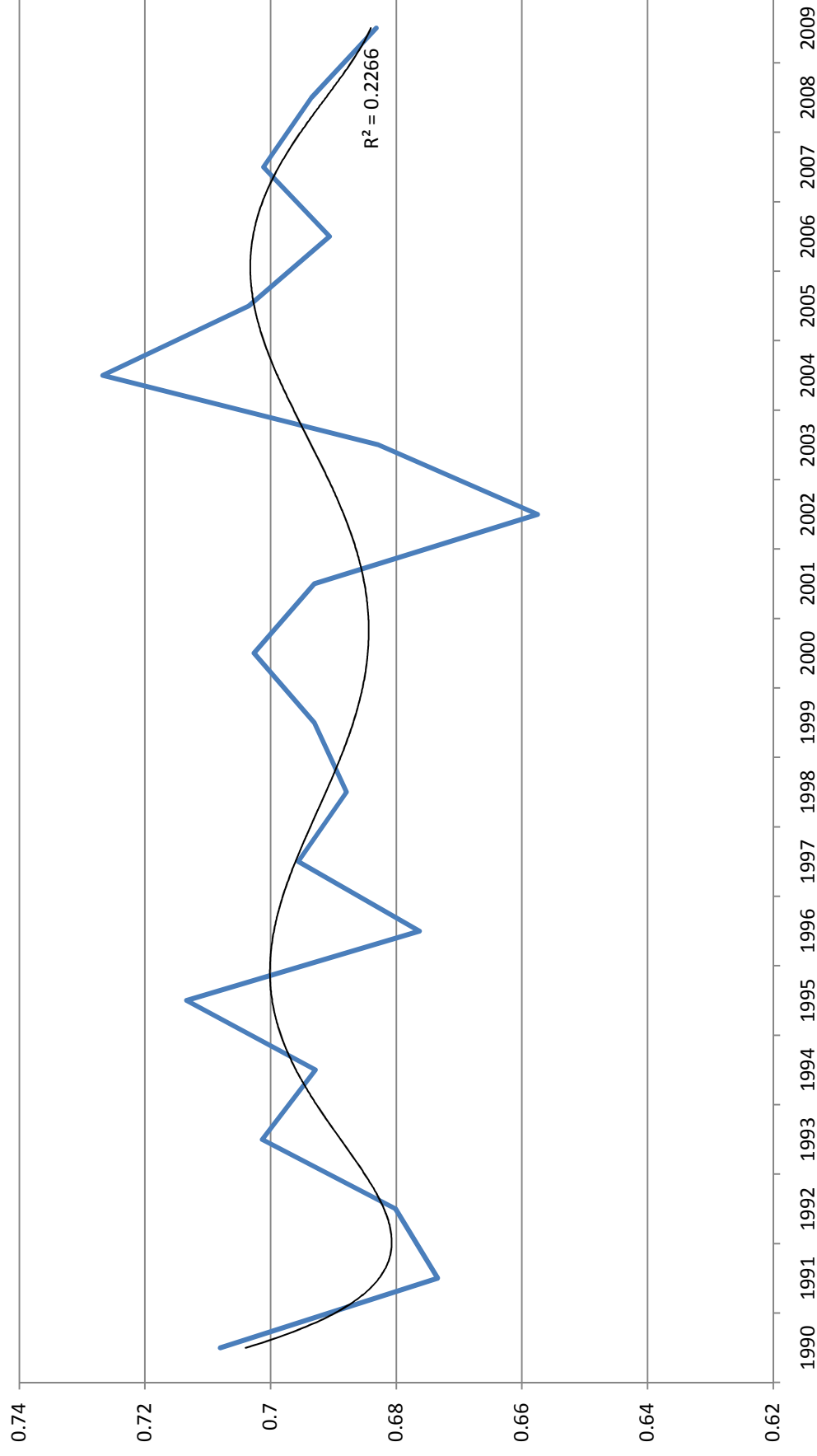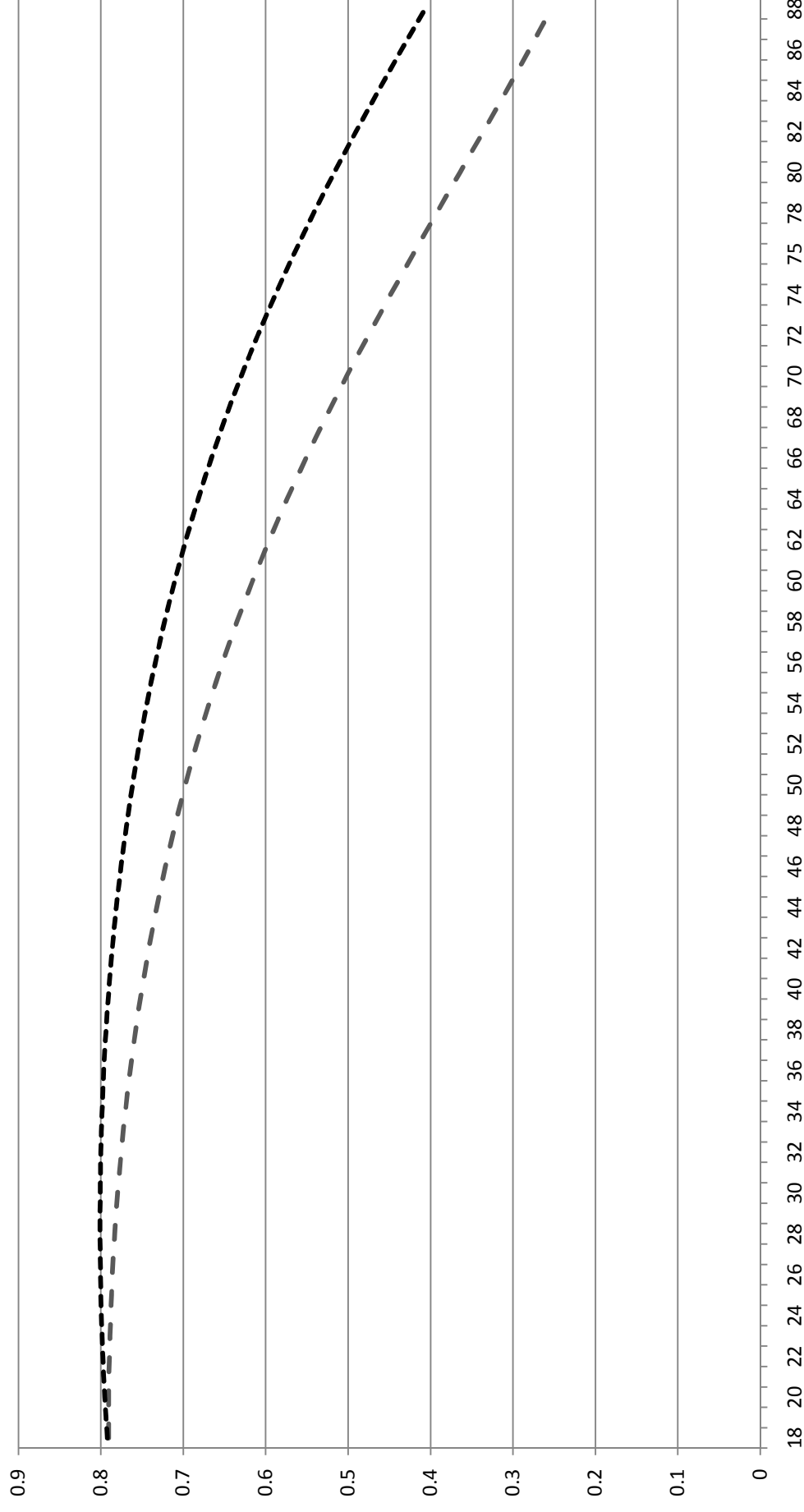
$R^2 = 0.2266$

28

19.07.2010

Figure 6. Probability of No Affiliation for East Germans, by Gender and Age.

Appendix A

Table A1: Survey Sources and Number of Cases by Year, 1969-2009

Survey Name	1969	1972	1973	1975	1976	1977	1978	1979	1980	1981	1982	1982	1984	1985	1986	1987	1988	1989	1990
ALLBUS									2784		2820		2816		2894		2846		2866
ELSTUDY		1924			1946				11237				4871			13477			
ELSTUDYP																			1940
ESS																			
ESSIV																			
EUROBAR			1835	939	944				944	902				944	925	931	986		
EUROBAR1						942	934											960	1858
EUROBAR2						946	943											2078	1003
EUROBAR3																			
EUROBAR4																			
EVS										1224									3222
FEDPARELE	1086																		
GNES																			
ISSP														982		1310		1476	
POLATT																			
POLITBAROM1						9516	9634	9910	11236	10964	9238	9632	10517	10758	10629	10566	10485		
WVS																			
	1086	1924	1835	939	2890	11404	11511	9910	26201	13090	12058	9632	18204	12684	14448	26284	14317	4514	10889
	0.35	0.62	0.59	0.30	0.94	3.69	3.73	3.21	8.48	4.24	3.90	3.12	5.89	4.11	4.68	8.51	4.63	1.46	3.53

19.07.2010

This page contains a wide (landscape) cross-tabulation. The column headers are the years 1991–2009, plus a "Total" column and a "%" column. The bottom two lines give the per-year column totals and their percentages. Because many interior cells are sparse and some category rows are unlabeled, the data is reproduced below grouped by year (each year's cell values are listed, and both sets of margin totals — per-year and per-category — are given).

Per-year rows (values, year total, % of grand total)

Year	Cell values	Total	%
1991	2861; 1948	4809	1.56
1992	3328; 2040; 838; 1901; 1905	10012	3.24
1993	1969; 2033; 1975	5977	1.93
1994	3228; 2661; 1923; 3857	11669	3.78
1995	1976; 2070; 1775	5821	1.88
1996	3292; 1905	5197	1.68
1997	1939; 1637; 3799	7375	2.39
1998	3029; 1901; 1893; 3129	9952	3.22
1999	1924; 1909; 1343	5176	1.68
2000	3576	3576	1.16
2001	1283	1283	0.42
2002	2625; 213; 3059	5897	1.91
2003	2524; 1207	3731	1.21
2004	2763; 2289	5052	1.64
2005	402; 1413; 1460; 1594	4869	1.58
2006	3223; 2472	5695	1.84
2007	261	261	0.08
2008	3252; 2018; 1464	6734	2.18
2009	561; 1428	1989	0.64

Per-category (column) totals and percentages

Total	%
48203	15.60
33455	10.83
1940	0.63
8161	2.64
2579	0.83
19911	6.45
16701	5.41
13294	4.30
1901	0.62
1905	0.62
6355	2.06
1086	0.35
1893	0.61
14582	4.72
10045	3.25
123085	39.85
3799	1.23
308895	**100.00**

APPENDIX B: Survey Wording of Questions Used for the Dependent Variable

ALLBUS / German General Social Survey
Until 2002: *What religion do you belong to?*
From 2004: *May I ask you what religion you belong to?*
1. The German Protestant church
2. A Protestant free church
3. The Roman Catholic church
4. Another Christian denomination
5. Another non-Christian religion
6. No religious affiliation
7. Refused
8. No answer

Eurobarometers
Until 1971: *DO YOU BELONG TO A RELIGION? (IF YES) WHICH ONE?*
1973: *DO YOU BELONG TO SOME RELIGIOUS DENOMINATION?*
Since 1973: *DO YOU REGARD YOURSELF AS BELONGING TO A RELIGION? <IF YES> WHICH OF THEM?*
1 Catholic
2 Orthodox
3 Protestant
4 Other Christian
5 Jewish
6 Muslim
7 Sikh
8 Buddhist
9 Hindu
10 Atheist
11 Non believer/Agnostic
12 Other (SPONTANEOUS)
13 DK

International Social Survey Programme
Which religious group do you belong to?
10 Catholic
11 Greek Catholic
20 Jewish
30 Muslim, Islam
31 Druse
40 Baptist
41 Methodist
42 Lutheran
43 Presbyterian/ Church of Scotland
44 Church of England/Church of Ireland/Anglican
45 URC/ Congregational
46 Episcopal
47 Unitarians
48 Protestant (evangelist) free church
49 Protestant (not elsewhere classified or not specified)
51 Hindu
52 Buddhists
53 Sikh

19.07.2010

55 United Church
61 Brethren, Czech Unity of Brethren
62 Pentecostal
63 Mormon
64 Salvation Army, Assemblies of God7 MS
65 Seventh Day Adventists
90 None
91 No denomination given
92 Other Christian religion
93 Other non-Christian religion
94 Other not classified
98 Don't know
99 No answer, refused

European Values Study
Do you belong to a religious denomination?
0 No
1 Yes

German Election Studies
What's your religious denomination?
0 no fourth wave interview
1 Catholic
2 Protestant/Lutheran
3 other
4 none
9 NA

German National Election Study
What is or was your religious denomination?
1 Protestant/Lutheran
2 Roman-Catholic
3 Jewish
4 Muslim
5 other denomination
6 non-denominational
9 NA

World Values Survey
Do you belong to a religious denomination? In case you do, answer which one?
- 86 religious denominations

Political Attitudes, Political Participation and Voter Conduct in United Germany
What is or was your religious denomination?
1 Protestant/Lutheran church
2 Catholic church
3 other
4 left the Protestant/Lutheran church
5 left the Catholic church
6 never was a member of a church/religious denomination
8 don't know
9 refused

19.07.2010

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19.07.2010