

## Educational expansion and declining religiosity in Italy: a pathway to support for gender egalitarianism among men and women?

### 1. Introduction

In the last decades, cultural norms connected to the role of women in society have been changing in many countries. Support for gender egalitarianism has been on the rise throughout the Western world in countries such as the US (Cotter *et al.*, 2011), Australia (van Egmond *et al.*, 2010), Italy (Lomazzi, 2017) and it has been reported also from cross-national studies (Inglehart, Norris, 2003; Seguino, 2007). Is this observed shift in values due to changes in the composition of the population, or due to changes in individuals' opinions due to change-inducing factors? Previous research that has compared levels of support for gender egalitarianism over time and across different birth cohorts (Brewster, Padavic, 2000; Cotter *et al.*, 2011) has found mostly period effects, "but the impetus for change continues to be unclear" (Davis, Greenstein, 2009, 91).

Over the past three decades, the average Italian has become more likely to endorse gender egalitarianism (Lomazzi, 2017). The shift from norms emphasizing traditional gender roles to norms supporting gender equality is often explained by structural and cultural developments such as rising levels of educational attainment and declining religiosity (Inglehart, 1997). However, these theoretical expectations are seldom tested empirically. Since the 1950s Italian education expanded rapidly. While in the 1940s the number of enrolled students in Italian universities has been below 0.5 million, it has become about 2 million in the 1990s (Triventi, Trivellato, 2009). Religiosity, on the other hand, is declining in Italy, as documented by Pisati (2000) and more recently by Vezzoni *et al.* (2015) showing that attendance at Mass in Italy has decreased since the 1960s, despite a period of stability in the 1980s. This article contributes to the literature by empirically investigating the question of to what extent the processes of educational expansion in terms of university graduates and declining religiosity have affected views on the societal roles of men and women in Italy. The analysis also sheds light on the extent to which these processes have differential effects among men and women. This is not to say that education and religiosity are the only factors affecting attitudes to gender egalitarianism and I do not deny the role of other factors such as,

for instance, female labour participation, declining fertility, and the women's movement (Brewster, Padavic, 2000; Cotter *et al.*, 2011). Individuals can certainly be subjected to several influential factors when forming or changing their attitudes.

The analyses presented here draw on data from four waves of the European Values Survey carried out from 1990 until 2017, which allow for longitudinal comparisons of trends in attitudes to gender egalitarianism. I use a hierarchical age-period-cohort model integrated with contemporary and historical measures, to identify the most influential factors for individual variation in gender beliefs among Italians. In the first section, I provide a short overview of existing theories explaining individual differences in gender attitudes. I then introduce the data, all measures used in the models and the methodological strategy. The results section presents the empirical analysis for the overall Italian sample, as well as for women and men separately. Finally, the conclusion shortly discusses the implications of the findings and directions for future research.

## 2. Theories of gender attitudes

Gender egalitarianism is generally understood as an overarching attitude and belief system regarding gender relations in society, which supports equal rights, roles and responsibilities for men and women (Bergh, 2006). Bolzendahl and Myers (2004) suggest that factors affecting individual-level gender egalitarianism can be theoretically divided into either interest-based or exposure-based. Interest-based theories argue that those who directly benefit most from gender egalitarianism are most likely to support it. Women are, of course, thought to be those who benefit the most. Especially women who enter the labour force are more likely to perceive benefits for themselves regarding a more gender-egalitarian society, as it is in their direct interest to have equal opportunities to men (Cunningham, 2008). In general, men are less likely to believe that gender equality will benefit them (Davis, Greenstein, 2009) although previous research has shown that, in fact, gender equality affects positively both women and men (Barnett, Rivers, 2004). Nevertheless, interest-based gender egalitarianism can also be endorsed by men whose partners are on the labor market as gender equality would result in improvements in their economic standing (Yu, Lee, 2013), or who become fathers of daughters (Perales *et al.*, 2018).

Research has also identified other individual-level factors that are associated with gender egalitarianism. Increased levels of religiosity are expected to reduce support for gender egalitarianism (Peek *et al.*, 1991). Higher levels of education are often found to be associated with more gender egalitarian attitudes (Bolzendahl, Myers, 2004) as is participating in the labor force (Seguino, 2007). Fan and Marini (2000) show that

married (and cohabitating) individuals are less egalitarian compared to single, divorced or separated individuals and more children leading to less egalitarian attitudes (Bolzendahl, Myers, 2004). Finally, people living in more urban areas are expected to support gender egalitarianism more than those living in rural settings (Carter, Borch, 2005).

As the demographic composition of the population at the societal level changes and those more predisposed to hold gender egalitarian views (for example, more women in education and labour force) become a larger part of the population, this fosters more gender egalitarianism at the societal level. On the other hand, theories focusing on broad shifts in values suggest that values develop, at least to a certain extent, independently of individual social structural positions. According to these theories, value changes may occur similarly across diverse social groups due to general cultural and economic development, particularly among younger generations. Nevertheless, these societal value shifts do not necessarily erase attitudinal differences across individuals across different social positions. The present article's focus is to study broad shifts in gender egalitarianism in Italy.

### 2.1. Cohort effects

Theories of socialization argue that individuals experience a finite period of 'plasticity', the so-called impressionable years, while they transition from adolescence to young adulthood. During this time they adapt to their wider societal context and form their basic values, attitudes and worldviews (Mannheim, 1952; Sears, 1983). These values and attitudes are then expected to persist through the individuals' lifetime and rarely be subjected to change (Lewis-Beck, 2009). Assuming that attitudes are formed quite early in life and persist over a lifetime, we would then expect to observe a systematic pattern in values, beliefs, and attitudes across cohorts as each cohort has a different contextual environments in which they came of age (Schuman, Corning, 2012).

### 2.2. Period effects

Each individual lives his life in a specific period characterized by historical, economic and political circumstances that may affect his attitudes. Theories advancing the effect of "time period" argue that certain periods might exert a shift in attitudes for all individuals in society, regardless of their age or birth cohort. These theories, contrary to socialization theories, assume that individuals are prone to changes in attitudes throughout their life-course and can adapt their beliefs according to societal developments. If society at large is exposed to a cultural change such as a more egalitarian discourse of gender roles, according to these theories it can result in an aggregate societal shift in support for gender egalitarianism from one time period to another (Inglehart, Norris, 2003).

### 2.3. Age effects

In line with theories of intra-individual change, individuals could change their gender attitudes not only due to changes in society but also due to different life-cycle events that expose them to gendered expectations such as marriage, parenthood and work. In other words, although both period and age effects expect intra-individual change in attitudes, period-effects expect influence on all individuals regardless of their age, while an age effect would be connected to biological and physiological aging or life experiences.

The “life-cycle argument” suggests that as people age they occupy different positions in the social structure, change roles, relationships and status, and therefore also their attitudes. While it is certainly important to control for age when studying the relationship of cohort and period effects on gender egalitarianism, when controlling for life-cycle characteristics such as marriage and having children, the effects of age are unlikely to be very strong. Moreover, aging effects will not cause aggregate attitudes shifts as long as the age composition of the public is stable over time. Since my interest is in identifying period and cohort effects, age effects are largely excluded from the discussion.

### 2.4. Macro-level factors affecting gender egalitarianism

Gender attitudes’ formation is a complex process where many different factors play a role. Many of those factors will be accounted for in the models developed in this study. Nonetheless, I concentrate on two in particular – educational expansion and declining religiosity of the Italian society at large. Following interest-based theories I also assume that there might be differences in how these factors affect men and women and thus analyze the effects separately for both genders.

#### 2.4.1. Educational expansion

Higher levels of education have been found to relate to more support for gender egalitarianism (Bolzendahl, Myers, 2004; Brewster, Padavic, 2000) in several countries. Education is often attributed a “liberalizing effect” by exposing people to alternative ideas and socializing them into the official culture (Drazanova, 2017). At the same time, when general societal educational levels rise in society, the likelihood of people interacting with others embracing gender egalitarian values increases, possibly also shifting the dominant societal discourse towards more egalitarianism. Therefore, one might expect educational expansion to be positively associated with support for gender egalitarianism. This effect might manifest in two ways. Higher societal levels of education during cohorts’ impressionable years will lead to an increase in support for gender egalitarianism as cohorts become socialized in a society where these values are propagated, and they have a higher chance of interacting with people

Table 1. *Overview of the proposed cohort-based and period-based hypotheses*

	Expansion of Education	Decline of religion
<b>Cohort-based HP</b>	<p>Individuals belonging to a birth-cohort with higher levels of university graduations during their formative years are significantly more likely to express support for gender egalitarianism than individuals belonging to other cohorts (H1). This effect should be stronger for women than for men (H1a).</p> <p>Individuals belonging to a birth-cohort with higher levels of female university graduations during their formative years are significantly more likely to express support for gender egalitarianism than individuals belonging to other cohorts (H2). This effect should be stronger for women than for men (H2a).</p>	<p>Individuals belonging to a birth-cohort socialized in a more secular society during their formative years are significantly more likely to express support for gender egalitarianism than individuals belonging to other cohorts (H3). This effect should be stronger for women than for men (H3a).</p>
<b>Period-based HP</b>	<p>Individuals' living in a period with higher numbers of university educated individuals will be significantly more likely to express support for gender egalitarianism than individuals belonging to other periods (H4). This effect should be stronger for women than for men (H4a).</p> <p>Individuals' living in a period with higher numbers of female university graduations will be significantly more likely to express support for gender egalitarianism than individuals belonging to other periods (H5). This effect should be stronger for women than for men (H5a).</p>	<p>Individuals' living in a period with higher numbers of non-religious individuals will be significantly more likely to express support for gender egalitarianism than individuals belonging to other periods (H6). This effect should be stronger for women than for men (H6a).</p>

embracing gender egalitarianism. Thus, I hypothesize that individuals belonging to a birth-cohort with higher levels of university graduations during their formative years are significantly more likely to express support for gender egalitarianism than individuals belonging to other cohorts (H1). This effect should be stronger for women than for men (H1a). Fe-

male educational expansion shall especially positively affect attitudes to gender egalitarianism. Therefore, I expect that individuals belonging to a birth-cohort with higher levels of female university graduations during their formative years are significantly more likely to express support for gender egalitarianism than individuals belonging to other cohorts (H2). This effect should be stronger for women than for men (H2a).

#### 2.4.2 Declining religiosity

Religious institutions have traditionally enforced social norms regarding the roles of women and men. While men have been prescribed the role of breadwinners, women have been assigned the role of home-makers (Inglehart, Norris, 2003). Declining religiosity is therefore one of the modernization factors affecting gender roles and attitudes regarding the appropriate role of men and women in society. In line with this, previous studies have found higher levels of support for gender egalitarianism among non-religious individuals (Bolzendahl, Myers, 2004). I, therefore, hypothesize that individuals belonging to a birth-cohort socialized in a more secular society during their formative years shall show more support for gender egalitarianism (H3) and this effect shall be stronger for women than for men (H3a).

In contrast, I also hypothesize that educational expansion (H4) and especially female educational expansion (H5) and declining religiosity (H6) could also affect individuals living in such a context regardless of their age (i.e. period effects) and these effects shall be stronger for women than for men (H4a, H5a and H6a). Given the relatively high number of hypotheses, Table 1 shows all the relevant hypotheses in a more systematized manner.

### 3. *Data and Methods*

My interest is in explaining differences in individual attitudes to gender equality across cohorts and time periods in Italy. The complexity of my design requires an accurate specification of factors at each level of analysis. To test my hypotheses, micro-level data that include measures of attitudes to gender egalitarianism at the individual-level, as well as contextual-level data for cohorts and survey years, are required. To assess the contextual socialization effect during respondents' formative years, I collect indicators that capture historical characteristics of interest (at the time when respondents were 20 years old).

#### 3.1. Data

At the individual level, the present analysis relies on data for Italy from the European Values Study (EVS) for the period 1990-2020 (European

Values Study, 2021)<sup>1</sup>. The EVS survey instruments have been widely used by scholars to measure attitudes towards gender egalitarianism. Using the EVS allows me to disentangle the effect of age, cohort and time period on gender attitudes across a number of cohorts because people of the same cohort are observed at different stages of their life as well as at different time periods. Moreover, due to the usage of longitudinal data, I am also able to observe different effects of time periods. I integrate the micro-level data from the EVS with contextual data at the cohort and period level.

### 3.2. Method

Research on cohort and period effects needs to address the potentially confounding influences of age effects when estimating models. In the literature, this issue is recognized as the age-period-cohort “identification problem” and is well known in studies of this type (Yang, 2008; Bell, Jones, 2018). The identification problem emerges because age, period and cohort effects are linear functions of one another. As soon as we know two values, we simultaneously know the third, since age = period (year of survey) – birth year. Age, period and cohort effects can be estimated if some kind of constraint is imposed on one of the effects, which breaks the linear dependence in the statistical model. For repeated cross-sectional data such as the EVS, a hierarchical age-period-cohort estimation with cross-classified random effects modeling (HAPC-CCREM) is well suited to overcome the identification problem<sup>2</sup>.

HAPC analysis constructs synthetic cohorts based on age groups to compensate for the absence of longitudinal data, while individuals are cross-classified<sup>3</sup>, nested in both period and cohort. Period and cohort are

<sup>1</sup> Unfortunately, the earliest wave of the EVS (1981) had one of the dependent variable’s indicators missing and thus could not be used for the purpose of this study.

<sup>2</sup> I am aware that, as has been the case with all of the widely used APC methods, HAPC modeling has been subjected to debate and critique (most famously, by Bell and Jones, 2018). The main criticism that Bell and Jones (2018) raise regarding HAPC models is that they can be biased and misleading when the dependent variable follows period or cohort near-linear trends (i.e. a continuous upward/downward trend). To confirm the suitability of HAPC modeling in this study, I take steps to rule out that such linear trends might exist in the sample. A visual inspection of Figure 2 and Figure 3 demonstrates that neither cohorts nor periods in the sample follow a, although increasing, consistent linear trend, both in the full sample as well as within each gender.

<sup>3</sup> In cross-classified data, lower-level units do not belong to one and only one higher level unit. Rather, lower-level units belong to pairs or combinations of higher-level units formed by crossing two or more higher level classifications with one another. Individual respondents can potentially belong to different combinations of cohorts and periods. This differentiates these type of modelling strategy from, for instance, hierarchical multilevel models also often used with repeated cross-sectional surveys, where each lower-level unit belongs to one and only one higher level unit (level 2) and this, in turn, might belong to one and only one higher level unit (level 3).



therefore treated as level 2 variables, while age is considered as level 1 variable of the multilevel model which can effectively disentangle the identification problem among age, period, and cohort, because variables at different levels are not directly additive. When knowing the cohort and period, one cannot determine the exact age of the respondent, but only a range of possible ages. Moreover, constructing cohorts that include several birth years is consistent with the theoretical expectations that there are no sharp differences between individuals born in one year compared to another, “but those distinctions are caused by relatively small changes over time such that meaningful divisions are only observed between those whose formative years are temporally distant from one another” (Down, Wilson, 2013, 438)<sup>4</sup>.

Taking into consideration all of the above, I apply a hierarchical two-level age-period-cohort model, with cross-classified random effects for cohorts and periods in the model (HAPC-CCREM).

The level-1 model is:

$$Y_{ijk} = \beta_{0jk} + \beta_1 X_{ijk} + e_{ijk} \quad (1)$$

where, within each cohort  $j$  and period  $k$ , respondents' attitudes to gender egalitarianism ( $Y$ ) are a function of their individual characteristics (vector  $X$ ).  $\beta_{0jk}$  is the mean of attitudes to gender egalitarianism of individuals in cohort  $j$  and period  $k$ ,  $\beta_1$  is the level-1 fixed effects and  $e_{ijk}$  is the random individual variation.

The level-2 model is:

$$\beta_{0jk} = \gamma_{0jk} + C_{0j}Z_j + K_{0k}T_k + \mu_{0j} + v_{0k} \quad (2)$$

where  $Z$  is a vector of cohort characteristics and  $T$  is a vector of period characteristics,  $\mu_{0j}$  is the residual random effect of cohort  $j$ ,  $v_{0k}$  is the residual random effect of period  $k$ . In both models (1) and (2)  $\mu_{0j}$  and  $v_{0k}$  are assumed normally distributed with mean 0 and variance  $\tau_\mu$  and  $\tau_v$  respectively.<sup>5</sup>

<sup>4</sup> Some studies choose to use fewer, longer generations which are constructed around politically salient events or eras. I borrow from Wuttke *et al.* (2020)'s explanation that “generational boundaries are seldom self-evident” and ill-specified thresholds run the risk of hiding meaningful patterns. According to Wuttke *et al.* (2020, 5) it is better to refrain from deriving a comprehensive categorization of generations and instead estimate smoothed nonlinear cohort effects that “retrieve any cohort commonalities among groups of individuals born in temporal proximity”.

<sup>5</sup> EVS is based on a complex sampling design where some individuals have a different probability to be selected. Sampling weights are therefore recommended to adjust for some socio-demographic characteristics such as gender, age, and region, which is the function of variable S017 in the EVS Trend File 1981-2017. Unfortunately, this variable



The HAPC-CCREM analysis of 6918 individuals nested in 16 cohorts and 4 periods uses a full maximum likelihood estimation.

### 3.3. Variables

#### 3.3.1 Dependent variable – support for gender egalitarianism

The dependent variable measuring support for gender egalitarianism is an additive index that was measured with two questions: (1) “A job is alright but what most women really want is a home and children” and (2) “A pre-school child is likely to suffer if his or her mother works” (European Value Survey, 2021). The two questions capture gender beliefs regarding two important dimensions of life that are affected by changes in gender roles: family and work. Although other questions measuring gender egalitarianism in the EVS were also available, unfortunately, they were only available in a more limited number of waves and therefore not directly longitudinally comparable.

The first question taps the notion of women and men having innately different interests and skills, which may guide preferences for a gender-typed division of roles. The second question draws on beliefs regarding the consequences of women working. These or similar questions have been widely used by other scholars studying attitudes to gender egalitarianism (Thijs *et al.*, 2019; Voicu, Tufiş, 2012).

Response categories for both questions range from 1 (strongly agree) to 4 (strongly disagree). I ultimately created an additive index ranging from 1 to 8. Since the number of respondents with at least one missing answer was slightly high (11 percent), I excluded those who have two missing values (122 respondents, which is around 1.56 percent of the sample) while retaining those with only one missing value (742 respondents, which is around 9.5 percent of the sample). A higher score on the dependent variable indicates more support for gender egalitarianism.

#### 3.3.2. Individual-level independent variables

I included a set of demographic variables in the model, such as age, gender, the age when respondent left education recoded in intervals<sup>6</sup>,

does not contain weighting for Italy in the EVS 1999 wave. Moreover, while most researchers agree on using weights for obtaining estimates of descriptive statistics like means, it is much more contested for the use of regression analysis such as OLS or logit (Solon *et al.*, 2015). Finally, even more generally, it is not clear how to model sampling weights in multilevel APC models, as weighting techniques for cross-classified methods have not been established (Raudenbush, Bryk, 2002).

<sup>6</sup> The variable has 10 categories ranging from 0 – no formal education, 1 – less than 12 years, 2 – 13 years, 3 – 14 years, ... 10 – 21 and more years. The highest level of education would have been a better choice to measure respondent's education but, unfortunately, the variable was not available for all the EVS waves in the Italian sample.

type of community the respondent resides in (urban versus rural), being unemployed, frequency of church attendance, being married and the number of children a respondent has.

Following standard practice in age-period-cohort models (Reither *et al.*, 2015), I divide the survey population into five-year cohorts, where individuals in the sample are nested in sixteen cohorts based on their year of birth. The cohorts' birth years range from 1921-1925 to 1996-2000. I excluded respondents born before 1921 as the number of these individuals was too small (116 respondents in the entire dataset) to create any five-year cohorts born between 1902-1920<sup>7</sup>.

Given the relatively small number of cases with missing data (less than 5%) in the independent variables combined, I applied listwise deletion of all respondents with missing answers to an independent variable of interest. The final sample is thus 6 918 respondents.

### 3.3.3. Cohort-level variables

To test my expectations regarding systematic cohort differences in attitudes to gender egalitarianism, I introduce a series of cohort independent variables into the model. Firstly, information for all independent cohort variables was gathered at the time respondents were 20 years old. Secondly, I then take the average across all years when respondents from one cohort were 20 years old to obtain a single value for each indicator of interest. For instance, for the oldest cohort (born between 1921-1925), an independent variable is calculated as the mean value of the independent variable in the years 1941, 1942, 1943, 1944, and 1945. As explained earlier in the theoretical section, it is not entirely clear what age does the effect of "impressionable years" fade away, but most social scientists agree it is somewhere between 20-25 years old. By averaging the cohort variables for the ages 20-25 in each cohort, I am allowing the cohort variables to have an effect beyond one's specific birth year.

Overall, educational attainment has increased in the last decades in Italy, while higher education has also been found to have positive effects on gender attitudes (Bolzendahl, Myers, 2004). Thus, one would expect higher levels of (female) education amongst younger cohorts to play a role in inter-cohort differences in attitudes to gender egalitarianism. To test this assumption, I control for the number of university graduates divided by the overall population in a given year when each cohort has been in their impressionable years. I also specifically test the effect of the number of female graduates per 100 graduations. I draw on data from the Istat's time series on numbers of university graduates for the

<sup>7</sup> The cohort with most individual respondents (1916-1920) would have 69 respondents in total in the overall sample, while the older cohorts would not even reach 20 individuals per cohort in the overall sample.

years 1926-2014 (Istat, 2021a), which provides the absolute number of overall university graduates in Italy for each year and also more specifically female graduates per 100 overall graduates as well as Istat's time series on the resident population for the years 1862-2014 (Istat, 2021b).

I also expect growing up with different degrees of religiosity to play an important role in intra-cohort differences in gender egalitarianism. To test whether cohort differences in gender egalitarianism are due to differences in religiosity, I calculated the percentage of non-religious individuals within each cohort. This has been calculated from the EVS variable asking respondents whether they belong to a religious denomination. For each cohort I then calculated the percentage of respondents answering not having any religious denomination at all.

#### 3.3.4. Period-level variables

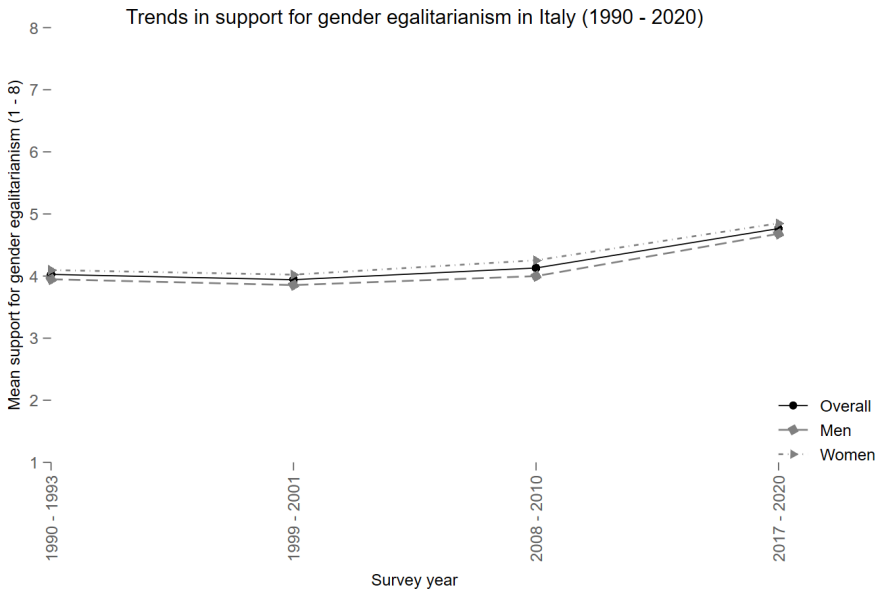
Certain periods might exert a shift in attitudes for all individuals in society, regardless of age or birth cohort. Therefore, in order to properly identify cohort effects and disentangle them from eventual period effects, we also need to control for period effects in the models. I therefore also incorporated contemporary societal circumstances regarding educational expansion and declining religiosity that are specific for the time period of the survey.

Data regarding the levels of tertiary educated people in Italy for each time period of the survey were derived from Oecd's (2021) "Population with tertiary education" statistics. The measure is the percentage of same age population with tertiary education at the year of each survey. Declining religiosity was calculated as the percentage of respondents answering not having any religious denomination at all at the time of each survey from the EVS itself.

### 4. Results

Figure 1 shows the trends regarding support for gender egalitarianism in Italy between the years 1990 and 2020 for the overall population as well as for men and women separately. Overall, the average support for gender egalitarianism has increased in Italy between the years 1990 and 2020. Consistent with previous research in other countries, women's mean support for gender egalitarianism is higher than that of men for each time period. An independent t-test was run on a sample to determine if the differences in gender egalitarianism between men and women were significant. The results showed that in the overall EVS Italian sample from all periods Italian men had statistically significantly lower gender egalitarian attitudes ( $4.165 \pm 0.023$ ) compared to Italian women ( $4.333 \pm 0.022$ ),  $t(7564) = -5.188$ ,  $p = 0.000$ . Men had also significantly lower gender egalitarian attitudes in each time period.

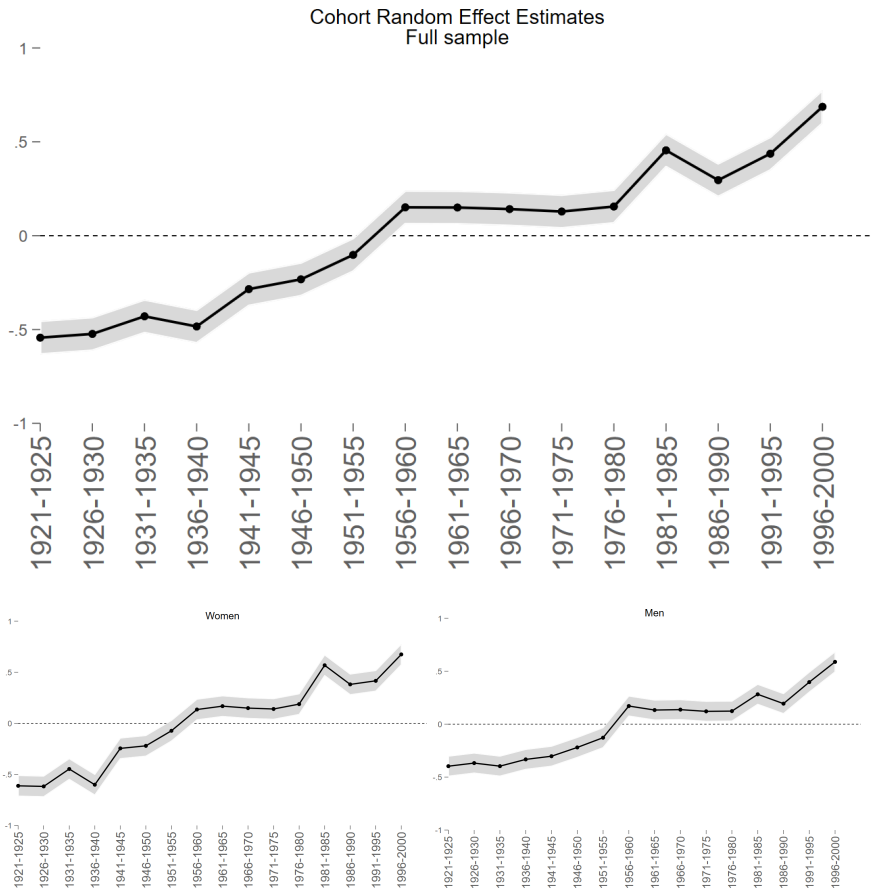
Figure 1. Trends in support for gender egalitarianism in Italy (1990 – 2020) for overall population and men and women separately



The overall temporal development of gender egalitarian attitudes shown in Figure 1 can either reflect pure period effects (attitudinal variation in the aggregate resulting from intraindividual change), pure cohort effects (attitudinal variation in the aggregate resulting from generational replacement even if no individual-level attitudinal change occurs), or a combination of period and cohort effects. The following analyses will try to disentangle these phenomena in more detail.

Table A4 in the Appendix presents the results from the hierarchical age-period-cohort models for the overall sample, while tables A5 and A6 present the results for females and males respectively. I begin the analysis by estimating the so-called null hierarchical cross-classified model (Model 0 in tables A4, A5 and A6). This model provides information on the variance components of gender egalitarianism at both levels of analysis (Level 1-individual, Level 2-cohort and period). It includes only an intercept, cohort random effects, period random effects and an individual level residual error term. Model 0 in table A4 shows that the mean respondent has a predicted gender egalitarianism score of 4.255, while an average Italian woman has a predicted score of 4.350 compared to the predicted score of 4.148 for an average Italian man (Models 0 in tables A5 and A6). Once again, this is consistent with

Figure 2. *Cohort Random Effect Estimates from the Unconditional Hierarchical Cross-Classified Models for the overall population and men and women separately*

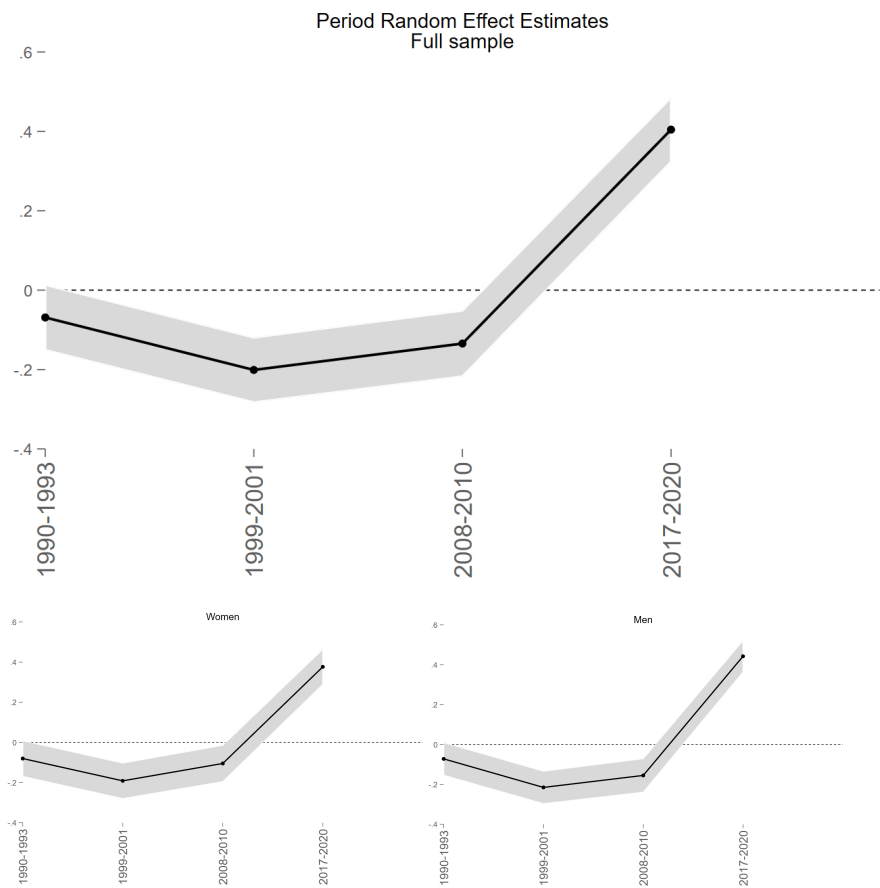


Note: Figure 2 displays the Best Linear Unbiased Predictions (BLUPs) of the cohort and period random effects from the unconditional model with a mean equal to zero and the confidence intervals as the grey areas.

previous research showing that women, in general, hold more gender egalitarian attitudes than men.

Variance partition coefficients (VPCs) allows to establish the relative importance of cohorts, periods and respondents as sources of variation of individuals' gender egalitarian scores. They report the proportion of the observed response variation that lies at each level of the model hierarchy. I report the VPCs from the null models for each sample. The null model for all Italian respondents shows that 7,4% of the variation

Figure 3. *Period Random Effect Estimates from the Unconditional Hierarchical Cross-Classified Models for the overall population and men and women separately*



Note: Figure 3 displays the Best Linear Unbiased Predictions (BLUPs) of the cohort and period random effects from the unconditional model with a mean equal to zero and the confidence intervals as the grey areas.

in gender egalitarianism lies between cohorts<sup>8</sup>, while 3,2% lies between periods and 8,4% lies between respondents. Thus, there are stronger gender egalitarian attitude differences across cohorts than there are across periods, but this does not exclude the relevance of period effects. In the model analyzing only women respondents, the variation in gen-

<sup>8</sup> The cohort level VPC is calculated as  $VPC_{o(3)} = \frac{\sigma(u_3)^2}{\sigma(u_3)^2 + \sigma(u_2)^2 + \sigma(e)^2}$

der egalitarian scores that lies between cohorts is 9,0% compared to 5,3% for men, while 2,9% (women) and 3,8% (men) of the variation lies between periods and 88,1% lies between individual women and 90,9% between individual men. Thus, there are stronger cohort effects for women than for men, while period effects are slightly stronger for men compared to women. This points to the possibility that gender egalitarianism has increased as a whole among Italian men across all ages, while Italian women might be more susceptible to forming gender egalitarian attitudes when young.

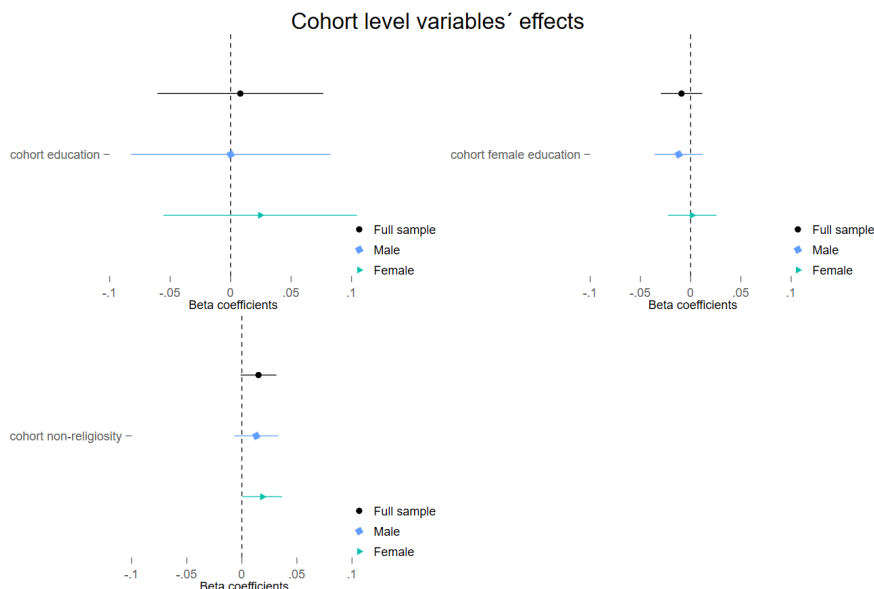
As can be seen from figure 2, younger cohorts are, overall, more positive in terms of gender egalitarianism than their older counterparts, but not always is any given cohort more supportive of gender egalitarianism than each of the older cohorts. Moreover, there are differences between cohort random effects for men and women. Cohort differences across Italian women are steeper than those across Italian men for cohorts born after 1980. Simply put, younger cohorts of women have significantly more positive gender egalitarian attitudes compared to older women cohorts, while the differences between male cohorts are not as pronounced. On the other hand, the oldest female cohort has more negative gender attitudes than the oldest male cohort. This visual illustration confirms that cross-cohort variations are rather important for understanding changes in gender egalitarian attitudes.

Period random effects presented in figure 3 reveal that there are also statistically significant temporal changes regarding attitudes to gender egalitarianism. While the level of gender pro-egalitarian attitudes became positive during the last periods, figure 3 also shows that gender egalitarianism in Italy slightly declined from 1990 to 2001. Nevertheless, since 1999-2001 gender egalitarian attitudes have been increasing and the pattern is very similar for both Italian men and women. Thus, figures 2 and 3 show that while there are gender differences with regard to cohort effects, differences regarding period effects between the two genders are neglectable.

In Models 1 in tables A4, A5 and A6 I add individual-level control variables to the null model and present the coefficients together with the associated standard errors for the fixed part of the models together with random coefficients for cohorts and periods. Consistent with most previous studies, on average, women are significantly more supportive of gender egalitarianism than men. Being younger, residing in an urban area, attending church less often, having more education and less children are also all characteristics significantly positively associated with gender egalitarian attitudes. On the other hand, being married and being unemployed is not significantly associated with gender egalitarianism. There are, however, some differences between Italian men and women when it comes to differences in the effect of sociodemographic variables (Models 1 in tables A5 and A6). While for men having children has no



Figure 4. Cohort level variables' effects in the full sample and for the male and female samples separately



significant effect on their gender egalitarian attitudes, women who have more children are significantly less pro-egalitarian than those with less or no children.

Adding individual-level variables to Model 0 has led to lowering the percentage of unexplained variance not only for the individual level, but also at the cohort level (tables A4, A5 and A6). This is due to some individual-level variables likely explaining some of the differences in gender egalitarian attitudes across cohorts. For instance, it is highly likely that education at the individual level also explains part of the cohort differences in gender egalitarian attitudes.

I hypothesized that individuals who belong to a birth-cohort that experienced their formative years during an educational expansion are significantly more likely to express support for gender egalitarianism (H1). Female educational expansion during cohorts' formative years shall especially positively affect attitudes to gender egalitarianism (H2) and this effect should be stronger for women than for men (H1a and H2a). Models 2 and 3 in tables A4, A5 and A6 investigate these propositions while also controlling for individual-level factors. Besides educational expansion, I also hypothesized cohort level declining religiosity to positively affect attitudes towards gender egalitarianism (H3) (Model 4). Figure 4 shows the effect of all cohort level variables across the three samples.

Figure 5. *Period level variables' effects in the full sample and for the male and female samples separately*

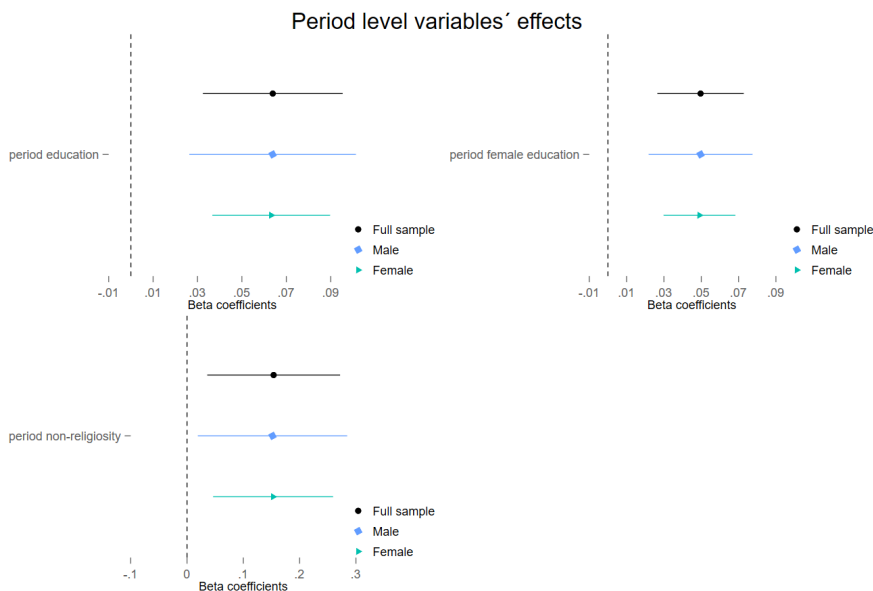


Figure 4 shows non-significant effects of (female) education at the cohort level for the overall Italian sample. Hypotheses H1 and H2 do not therefore find empirical support in the data. There is also no significant effect of cohort (female) educational expansion on gender egalitarianism for men nor women separately (H1a and H2a).

Moreover, cohort declining religiosity also does not affect individual gender egalitarianism (H3). However, when looking in more detail at separate effects of cohort declining religiosity for women (Model 4 in table A6) and for man (Model 4 in table A5) we see that the non-significance for the overall sample is likely due to differential effects for men and women. While for women declining religiosity during cohorts' impressionable years has a significantly positive effect on their gender egalitarianism, there is no such significant effect for men. Hypotheses H3 and H3a therefore find partial support in the data.

Finally, I hypothesized that (female) educational expansion (H4 and H5) and declining religiosity (H6) could also affect all individuals in such a context (i.e. period effects) and these effects shall be stronger for women (H4a, H5a and H6a). These hypotheses are tested in Models 5, 6 and 7 in tables A4, A5 and A6 and shown in figure 5.

Overall, hypotheses H4, H5 and H6 are confirmed by the results. Individuals who were exposed to higher shares of tertiary educated people

(H4) and women (H5) as well as non-religious people (H6) in a specific time period show more support for gender egalitarianism. This pattern is observed for both women (table A6) and men (table A5). In general, intracohort change (period effect) seem to be the prevalent mechanism of change in gender egalitarian attitudes in Italy, while socialization during impressionable years has a lower impact. The older generations support gender egalitarianism less than younger ones, but it seems to be mostly due to compositional effects (differences within cohorts rather than between cohorts) as is shown by the diminishing cohort variance when individual level variables are added to the model. This is further supported by the higher explained variance for periods compared to cohorts in the HAPC-CCREM models. These findings seem to be consistent with previous work on gender egalitarian attitudes in Italy (Lomazzi, 2017).

## 5. Conclusion

Understanding what drives attitudes to gender equality is important for a variety of reasons. Gender equality is considered fundamental to human development (Inglehart, Norris, 2003) as the equality of men and women is seen as advantageous in many domains. Firstly, gender egalitarianism affects people's domestic lives as these attitudes are correlated with delayed entry into marriage and marital childbearing (Cunningham *et al.*, 2005) and positively related to a more equitable distribution of household labor (Greenstein, 1996). Secondly, gender egalitarianism affects the economy in general in the form of female employment, labour force participation and female earnings (Rodriguez, Pillai, 2017). Thirdly, gender egalitarianism also has a direct impact on crime rates (especially violence against women) (Jewkes *et al.*, 2015).

Firstly, the present article considers whether susceptibility to gender attitude change is in some way conditioned by age. Do change-inducing events influence all age-groups or only the young in their formative years? Is generational change the cause of social and historical change? Or do we observe generational differences because of the social climate and historical events individuals live through? Using a hierarchical age-period-cohort cross-classified random effects models (HAPC-CCREM) I study differences in gender egalitarian attitudes across sixteen cohorts over four time periods and around 7 000 individuals in the Italian sample of the European Values Study (1990 – 2020) integrated with contemporary and historical measures. The findings show that Italians are generally becoming more gender egalitarian. Based on the results, both period and cohort effects have, on average, contributed to the increase in gender egalitarianism over the past three decades in Italy. This points to the fact that gender egalitarian attitudes are rather self-interest attitudes (similarly to attitudes regarding, for instance, tax policy preference) which are

likely to be responsive to changes over a person's life or particular events rather than symbolic attitudes that have a more affective basis and are likely to stay stable through lifetime.

The main foci of the article has been, nevertheless, to evaluate whether, as often proclaimed in the literature (Inglehart, 1997, 2008), educational expansion and declining religiosity act as possible change-inducing factors that contribute to a social environment fostering gender egalitarianism. The focus has been to disentangle whether these two societal phenomena have particular effects on contemporary attitudes based on early-life socialization or affect the population at large, regardless of their age. Among socialization effects, declining religiosity increases women's, but not men's support for gender egalitarianism. On the other hand, being socialized in a more educated society does not increase support for gender egalitarianism for neither of the genders. Intracohort change seems to be the prevalent mechanism of altering support for gender egalitarianism in Italy. (Female) educational expansion as well as declining religiosity in a specific historical period significantly positively affect support for gender egalitarianism among both genders.

The findings of this research imply that contemporary levels of education and declining religiosity of the Italian society are significantly stronger predictors of changes in attitudes towards gender roles in Italy compared to historical levels during individuals' so-called "impressionable years". Therefore, countries like Italy are going to become increasingly tolerant of gender egalitarianism overtime if educational expansion and declining religiosity are to continue. This has important political implications, encouraging new legislation reflecting on these changes and departing from the traditional male breadwinner model. Nevertheless, even with rising levels of education and declining religiosity, given that men embrace cultural changes in gender roles to a slightly lower extent than women, the achievement of widespread gender equality may be slower than anticipated.

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## Appendix

Table A4. Hierarchical age-period-cohort models for support of gender egalitarianism for the overall Italian sample (1990-2020)

	Model 0		Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Intercept	4.255***	(0.159)	4.220***	(0.191)	4.183***	(0.248)	4.818***	(0.720)	3.752***	(0.307)	3.453***	(0.219)	3.592***	(0.182)	1.421	(1.099)
<b>Individual level variables</b>																
Age	-0.009***	(0.001)	-0.008***	(0.002)	-0.014**	(0.005)	-0.014**	(0.005)	-0.005*	(0.003)	-0.009***	(0.001)	-0.009***	(0.001)	-0.009***	(0.001)
Female	0.243***	(0.032)	0.243***	(0.032)	0.243***	(0.032)	0.243***	(0.032)	0.243***	(0.032)	0.243***	(0.032)	0.243***	(0.032)	0.243***	(0.032)
Church more than once a month	-0.182***	(0.032)	-0.182***	(0.032)	-0.182***	(0.032)	-0.182***	(0.032)	-0.181***	(0.032)	-0.182***	(0.032)	-0.182***	(0.032)	-0.182***	(0.032)
Married or cohabitating	0.022	(0.037)	0.023	(0.038)	0.024	(0.037)	0.024	(0.037)	0.0226	(0.037)	0.023	(0.037)	0.023	(0.037)	0.022	(0.037)
N of children	-0.038*	(0.016)	-0.039*	(0.016)	-0.039*	(0.016)	-0.039*	(0.016)	-0.039*	(0.016)	-0.038*	(0.016)	-0.039*	(0.016)	-0.038*	(0.016)
Education	0.063***	(0.005)	0.063***	(0.005)	0.063***	(0.005)	0.064***	(0.005)	0.063***	(0.005)	0.063***	(0.005)	0.063***	(0.005)	0.063***	(0.005)
Urban	0.221***	(0.036)	0.221***	(0.036)	0.221***	(0.036)	0.221***	(0.036)	0.221***	(0.036)	0.223***	(0.036)	0.223***	(0.036)	0.222***	(0.036)
Unemployed	-0.086	(0.067)	-0.086	(0.067)	-0.087	(0.067)	-0.087	(0.067)	-0.085	(0.067)	-0.087	(0.067)	-0.087	(0.067)	-0.087	(0.067)
<b>Cohort level variables</b>																
Tertiary educated by overall population			0.008	(0.035)												
Female graduates per 100 graduations					-0.009	(0.011)										
Cohort religiosity									0.013	(0.008)						
<b>Period level variables</b>																
Period educational expansion											0.064***	(0.016)				
Period female educational expansion													0.049***	(0.011)		
Period religiosity																
<b>Random effect estimates</b>																
															0.154*	(0.060)

Cohort	0.147	(0.056)	0.004	(0.003)	0.005	(0.003)	0.004	(0.003)	0.005	(0.003)	0.004	(0.003)
Period	0.063	(0.046)	0.116	(0.083)	0.113	(0.082)	0.146	(0.111)	0.090	(0.067)	0.022	(0.016)
Individual	1.771	(0.028)	1.688	(0.028)	1.688	(0.028)	1.688	(0.029)	1.688	(0.028)	1.688	(0.028)
VPC cohorts		7,4%										
VPC periods		3,2%										
		89,4%										
VPC individuals												

Entries are unstandardised coefficients and standard errors. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05 Level 1 N: 6 918; Level 2 Cohort N: 16; Level 2 Period N: 4

Table A5. Hierarchical age-period-cohort models for support of gender egalitarianism for the Italian male sample (1990-2020)

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7			
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.		
Intercept	4.148***	(0.160)	4.294***	(0.208)	4.294***	(0.281)	5.084***	(0.842)	3.895***	(0.366)	3.529***	(0.264)	3.666***	(0.222)	1.533	(1.236)
Individual level variables																
Age	-0.010***	(0.002)	-0.010**	(0.003)	-0.016**	(0.006)	-0.007*	(0.003)	-0.011***	(0.002)	-0.010***	(0.002)	-0.010***	(0.002)	-0.010***	(0.002)
Church attendance	-0.136**	(0.047)	-0.136**	(0.047)	-0.137**	(0.047)	-0.134**	(0.047)	-0.135**	(0.047)	-0.135**	(0.047)	-0.135**	(0.047)	-0.136**	(0.047)
Married or cohabitating	-0.013	(0.061)	-0.013	(0.061)	-0.009	(0.061)	-0.016	(0.061)	-0.011	(0.061)	-0.011	(0.061)	-0.011	(0.061)	-0.012	(0.061)
N of children	-0.002	(0.026)	-0.002	(0.026)	-0.002	(0.026)	-0.003	(0.026)	-0.002	(0.026)	-0.002	(0.026)	-0.002	(0.026)	-0.002	(0.026)
Education	0.053***	(0.008)	0.053***	(0.008)	0.053***	(0.007)	0.052***	(0.007)	0.052***	(0.008)	0.052***	(0.008)	0.052***	(0.008)	0.053***	(0.008)
Urban	0.206***	(0.053)	0.206***	(0.053)	0.207***	(0.053)	0.207***	(0.053)	0.208***	(0.053)	0.208***	(0.053)	0.208***	(0.053)	0.208***	(0.053)
Unemployed	-0.129	(0.095)	-0.129	(0.095)	-0.129	(0.095)	-0.128	(0.095)	-0.128	(0.095)	-0.130	(0.095)	-0.130	(0.095)	-0.129	(0.095)
Cohort level variables																
Tertiary educated by overall population			1.83e-06	(0.042)												
Female graduates per 100 graduations					-0.012	(0.012)										
Period level variables																
Cohort religiosity							0.0131	(0.0102)								
Period educational expansion									0.064***	(0.019)						
Period female educational expansion											0.049***	(0.014)				
Period religiosity													0.152*	(0.067)		
Random effect estimates																
Cohort	0.103	(0.046)	0.003	(0.003)	0.003	(0.004)	0.002	(0.003)	0.003	(0.003)	0.003	(0.004)	0.003	(0.004)	0.003	(0.004)
Period	0.074	(0.055)	0.125	(0.090)	0.125	(0.092)	0.165	(0.128)	0.102	(0.075)	0.031	(0.023)	0.029	(0.022)	0.054	(0.040)
Individual	1.773	(0.043)	1.726	(0.042)	1.726	(0.042)	1.725	(0.042)	1.725	(0.042)	1.726	(0.042)	1.726	(0.042)	1.726	(0.042)
VPC cohorts		5.3%														
VPC periods		3.8%														
VPC individuals		90.9%														

Entries are unstandardised coefficients and standard errors. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05 Level 1 N: 3 338; Level 2 Cohort N: 16; Level 2 Period N: 4

Table A6. Hierarchical age-period-cohort models for support of gender egalitarianism for the Italian female sample (1990-2020)

	Model 0		Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Intercept	4.350	(0.16)	4.397***	(0.199)	4.287***	(0.264)	4.302***	(0.834)	3.834***	(0.328)	3.647***	(0.197)	3.786***	(0.168)	1.622	(0.991)
<b>Individual level variables</b>																
Age			-0.008***	(0.002)	-0.006*	(0.003)	-0.007	(0.006)	-0.003	(0.003)	-0.008***	(0.002)	-0.008***	(0.002)	-0.008***	(0.002)
Church attendance			-0.218***	(0.045)	-0.219***	(0.045)	-0.219***	(0.045)	-0.218***	(0.045)	-0.217***	(0.045)	-0.217***	(0.045)	-0.218***	(0.045)
Married or cohabitating			0.038	(0.048)	0.043	(0.049)	0.037	(0.048)	0.039	(0.048)	0.039	(0.048)	0.039	(0.048)	0.038	(0.048)
N of children			-0.064**	(0.021)	-0.064**	(0.021)	-0.063**	(0.021)	-0.064**	(0.021)	-0.064**	(0.021)	-0.063**	(0.021)	-0.063**	(0.021)
Education			0.072***	(0.007)	0.072***	(0.007)	0.072***	(0.008)	0.072***	(0.007)	0.072***	(0.007)	0.071***	(0.007)	0.071***	(0.007)
Urban			0.236***	(0.049)	0.235***	(0.049)	0.236***	(0.050)	0.235***	(0.049)	0.240***	(0.049)	0.240***	(0.049)	0.238***	(0.049)
Unemployed			-0.060	(0.094)	-0.060	(0.094)	-0.060	(0.094)	-0.054	(0.094)	-0.063	(0.094)	-0.062	(0.094)	-0.061	(0.094)
<b>Cohort level variables</b>																
Tertiary educated by overall population					0.024	(0.040)										
Female graduates per 100 graduations							0.002	(0.012)								
Cohort religiosity									0.019*	(0.009)						
<b>Period level variables</b>																
Period educational expansion											0.063***	(0.013)				
Period female educational expansion													0.049***	(0.009)		
Period religiosity															0.153**	(0.054)
<b>Random effect estimates</b>																
Cohort	0.180	(0.071)	0.003	(0.003)	0.002	(0.003)	0.003	(0.003)	0.002	(0.003)	0.003	(0.003)	0.003	(0.003)	0.003	(0.004)
Period	0.056	(0.043)	0.106	(0.075)	0.096	(0.071)	0.102	(0.084)	0.075	(0.056)	0.015	(0.012)	0.013	(0.011)	0.034	(0.026)
Individual	1.754	(0.041)	1.650	(0.038)	1.650	(0.039)	1.650	(0.039)	1.650	(0.039)	1.650	(0.039)	1.650	(0.039)	1.650	(0.039)
VPC cohorts		9.0%														
		2.9%														
VPC periods		88.1%														
VPC individuals																

Entries are unstandardised coefficients and standard errors. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05 Level 1 N: 3 564; Level 2 Cohort N: 16; Level 2 Period N: 4