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ORIGINAL RESEARCH

The Elephant in the Family Policy Room: How Care Culture Influences the Effects of Public Childcare on Women's Labor Market Participation in Europe

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Abstract
This paper examines how cultural contexts influence the extent to which policies aimed at supporting women's employment and gender equality achieve their objectives. More specifically, it addresses how the availability of formal public childcare services for children under the age of three and their expansion support women's labour market participation in different cultural contexts. Few studies have examined cultural and structural factors together. The study integrates individual-level data from the European Social Survey on women's employment and their attitudes with time-varying regional-level information from statistical offices on public early childhood education and care (ECEC) provision and information on gender care culture obtained from different waves of the European Values Study. We find that increasing the availability of ECEC is particularly effective in promoting women's full-time employment and women's labour market participation in contexts where traditional cultural values regarding gendered care prevail. The results appear to be independent of individual attitudes. The paper highlights the interaction between structural and cultural factors in shaping employment behaviour and suggests that the outcomes of social policy interventions, such as the expansion of ECEC, are strongly influenced by cultural contexts, although not necessarily in the expected direction.

Keywords Female employment · ECEC · Child care · Social investment · Care culture · Gender culture · European social survey

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1 Introduction

Women's labour market participation is a core topic in social science research as it is central to understanding gender inequalities, family dynamics and the structure and functioning of the labour market. In many countries, women's labour market participation decreases once they become mothers. However, social and institutional conditions can foster their participation. Scientific studies investigating the factors that influence women's labour market participation fall into two categories. On the one hand, research has focused on the role of formal institutions, particularly social (family) policies (Hook & Paek, 2020; Keck & Saraceno, 2013) and the provision of formal childcare services such as early childhood education and care (ECEC). These studies have shown that an increase in ECEC supply positively influences the labour market participation of mothers with young children and this effect often differs across social groups, with medium- to low-educated mothers, for example, benefitting more than highly educated ones (e.g. Brady et al., 2020; Hook & Paek, 2020; Misra et al., 2011; Scherer & Pavolini, 2023). On the other hand, research has examined the relationship between care culture and individual care preferences and female labour market participation, showing that a traditional gender care culture might make it more difficult for mothers (of young children) to remain in or (re-) enter the labour market. Gender care culture can be understood as a set of beliefs, norms and social expectations that define the behaviours of women and men and are enforced by society at large (Connell, 2009). Women who live in contexts with predominantly traditional norms of motherhood are less inclined to participate in the labour market, especially when they have young children (Uunk, 2015). However, individual gender role attitudes and preferences can also play a role in women's employment (Lietzmann & Frodermann, 2021; Sayer & Bianchi, 2000; Uunk & Lersch, 2019). Thus, most previous studies have focused either on structural or cultural factors influencing women's labour market participation, yet to fully understand participation requires attention to both aspects.

This contribution aims to fill this gap by analysing the effects of ECEC provision on women's labour market situation while considering the moderating role of societal cultural values and the relevance of individual attitudes toward motherhood in influencing this moderating role. Given that women's labour market participation is a multifaceted phenomenon, we analyse four different outcomes: active status in the labour market, actual employment and type of employment (full-time or part-time). The effects of ECEC provision may differ depending on the outcome measured (Brady et al., 2020; Pettit & Hook, 2009) and on how mothers—willingly or unwillingly—combine informal care, ECEC services and working-time arrangements. In contrast to most literature, which assesses contextual factors at the national level, we measure ECEC and cultural values using regional-level indicators and their changes over time, linking them to individual-level data on women's attitudes and their employment situations. This sub-national and longitudinal approach strenghten causal inference by leveraging within-country heterogeneity and avoiding confounding factors from unobserved national-level characteristics.

2 Background

Multiple factors affect women's participation in the labour market. The role of societal cultural values and individual attitudes regarding the most appropriate form of childcare has, in recent years, become an increasing part of the debate on the effects of ECEC provision on female labour market participation. Nonetheless, empirical research connecting the various dimensions – family policies and services, gender care culture, individual gender role attitudes – is scarce, not least because such an investigation is data-intensive, and only a few databases provide combined information on female labour market participation, family policies, gender care culture and individual gender role attitudes. Moreover, the limited literature in this area has produced mixed and inconclusive results. In addition, previous literature often adopts a comparative cross-country design using cross-sectional survey data, typically focusing on one point in time, although a few studies use time-series data (e.g. Heyne, 2017). Gender care culture and ECEC services are typically treated as country-level variables, with data collected from international databases (e.g. OECD Family Database). Single-country studies often use longitudinal data (e.g. Lietzmann & Frodermann, 2021; Schober, 2013; Uunk & Lersch, 2019) or, in recent years, factorial survey experiments (e.g. Bünning & Hipp, 2022; Fervers & Kurowska, 2022; Oehrli et al., 2022; Pedulla & Thébaud, 2015), but are available only for a limited set of countries, such as Germany, the UK, the US, Switzerland and Poland.

Within the broader literature on the determinants of female labour market participation, attention has centered on three lines of inquiry: the influence of cultural factors versus institutional factors; the distinction between cultural values and individual attitudes; and the methodological challenges of identifying causal effects.

2.1 Cultural Values or Social Policies?

Several studies have reported that both ECEC provision and gender care culture are significantly associated with mothers' labour market behaviour (Andringa et al., 2015; Cebrian et al., 2019; Heyne, 2017; Lutolf & Stadelmann-Steffen, 2022). However, other findings cast doubt on the relevance of cultural values. Uunk et al. (2005) reported that, once public childcare is considered, gender values are irrelevant in explaining the variation in women's changing working hours following the birth of their first child. Similarly, Steiber and Haas (2009) found that childcare provision and economic affluence influence employment, while cultural values (gender culture) do not. Pavolini and Van Lancker (2018) discovered that the design and structural limitations of available formal childcare services significantly influence access to formal childcare, more so than care culture. Notably, all these studies rely on cross-sectional data at the country level.

Studies examining the interaction in the relevance of formal childcare policies and care culture for female labour market participation typically aim to test whether 'traditional' or 'egalitarian' values moderate the effect of (increased) formal childcare availability on women's labour market outcomes. The underlying assumption is that 'traditional' social environments prioritise mothers' caregiving over their employment. This may lead not only to less developed ECEC systems but also to increased (social) costs associated with formal childcare uptake, while reducing the expected benefits from employment. Consequently, less positive (if any) effects of ECEC increases on women's employment may be realised.

Some empirical research confirms such a hypothesis. For example, Jappens and Van Bavel (2012) discovered that mothers in more conservative regions are more inclined to use grandparents as a primary source of childcare than formal alternatives. Additionally, Budig et al. (2012) and Boeckmann et al. (2014) found a mutual reinforcing effect on mothers' employment due to the interaction between favourable public attitudes toward gender roles and institutional structures. Uunk (2015) indicated that gender care culture and formal childcare provision each play significant, independent roles in women's employment; however, their study operationalised institutional support for female employment through a variable (the Gender Empowerment Measure) that does not directly measure state-provided institutional support, such as ECEC services.

Results from single-country studies generally also present a mix of findings. Oehrli et al. (2022) documented that both ECEC provision and, to some extent, individual gender attitudes influence mothers' employment intentions in Switzerland, whereas Fervers and Kurowska (2022) found significant moderating effects of gender care culture on the impact of ECEC policies on female employment in Poland. Finally, Pedulla and Thébaud (2015) showed that when policies supporting dual-earner arrangements alleviate constraints in balancing work and family life in the United States, attitudes shift toward a more gender-egalitarian division of work and family responsibilities.

A recent question is whether the effects of an ECEC extension on women's employment depends also on the initial level of ECEC available. Some studies find that positive effects exist only in areas where ECEC provision starts at low or medium levels (Ferragina, 2020; Scherer & Pavolini, 2023). Above a certain threshold (most studies estimate 40% ECEC coverage for children under three years of age), the impact of further increases in childcare provision on maternal employment may be limited or nonexistent due to a 'saturation effect'. The likely explanation is that in countries or regions with already high maternal employment rates and easy access to public childcare, further increases in ECEC provision will not lead to any further growth in maternal labour market participation. Given that ECEC levels are particularly high in less traditional regions, it is crucial to consider starting levels and the related non-linearities, factors overlooked in much of the existing literature.

2.2 Cultural Values or Individual Attitudes?

Culture can manifest and influence behaviour not only through societal values, norms and behavioural expectations, but also through the values and attitudes of individuals, which may or may not align with those of society. Several of the reported studies do not distinguish between these two channels. To understand whether differences in the cultural context (e.g. differences among countries, regions, counties) stem from contextual effects or compositional effects, meaning individual attitudes and their distribution across geographical areas, the inclusion of cultural values belonging to society *and* individual attitudes is necessary. Among the studies that have attempted to examine both in the analysis of female labour market participation, results are mixed. Some studies find only one of the two to be influential. For instance, Jappens and Van Bavel (2012) showed that what matters for childcare practices is family culture rather than individual attitudes. Conversely, Steiber and Haas (2009) and Uunk and Lersch (2019) found a significant effect of only individual-level attitudes on women's decision to participate in the labour market. Other studies have identified independent effects of both individual-level attitudes and cultural values (Andringa et al.,

2015; Heyne, 2017; Snijders & Bosker, 2012; Uunk, 2015). To better interpret the direction of causality between attitudes, gender care culture, and labour market decisions, Heyne (2017) also employed indicators related to religion as an alternative (and arguably exogenous) measure of culture, finding a significant culture-effect with this variable.

2.3 Issues with Causal Claims

Most of the above literature has encountered endogeneity issues. Not only does the development of specific types of family policies depend on pre-existing societal values, but the diffusion of ECEC services may lead to changes in values and attitudes. For instance, Zoch & Schober (2017) reported that policy reforms expanding public childcare altered gender ideologies in Germany. Additionally, Neimanns (2021) found that when ECEC provision is highly unequal, its expansion contributes to a divergence of attitudes across socio-economic groups, with individuals from lower-income backgrounds remaining more sceptical of maternal employment. Moreover, the link between women's employment and individual attitudes may run in both directions (reverse causality). Zhou (2017) reported that in the UK, women develop less traditional gender attitudes when they combine motherhood with full-time employment, whereas they adopt more traditional views when they withdraw from the labour market upon having a child. These studies suggest the presence of adaptive psychological processes that lead to a post hoc 'rationalization' of work-family decisions.

While individual attitudes may evolve to correspond to different situations, culture changes much more slowly (Aboim, 2010; Archer, 1996; Ziefle & Gangl, 2014). This slow change makes culture, much like ECEC, an exogenous contextual factor affecting individuals' choices. The implication is that the influence of culture is less affected by the issue of reverse causality than that of attitudes.[1] To mitigate the risk of reverse causality, several strategies have been adopted, including quasi-experimental research designs, longitudinal measures and the use of variables (e.g. religion) representing gender care culture that are theoretically less susceptible to such risks.

To rule out, at least to some extent, the influence of other national-level factors (e.g. economic development), a few studies exploit within-country, temporal and regional variation. The use of within-country variation in gender societal norms and ECEC provision explicitly leverages heterogeneity across contexts, providing more robust empirical tests for analysing the mechanisms relating women's behaviours to policy and cultural factors. Van Ham and Büchel (2006) studied the effects of regional heterogeneity on both women's willingness to work and their probability of employment by using regional data on unemployment rates and the availability of childcare services. Uunk and Lersch (2019) reassessed the contextual gender-role attitude effect on female labour supply by comparing variations in these contextual variables across UK counties. Most recently, Fervers and Kurowska (2022) analysed the gender cultural context at the level of Polish counties, positing gender culture as a moderator of the impact of ECEC provision on maternal employment. We follow this literature and exploit the variation over time of contextual factors, both structural and cultural ones, at the sub-national level.

[1] Given that we are interested in explaining individuals' behaviour and not the development of either ECEC or cultural values, we argue that endogeneity issues on the macro level are of less relevance for this paper.

2.4 Research Aims and Hypotheses

This paper extends the existing literature by jointly analysing structural and cultural factors and their interactions in influencing women's labour market participation. Conceptually and empirically, it distinguishes gender care culture from individual attitudes and addresses the question of whether culture influences outcomes through compositional effects or whether these are genuine contextual effects (i.e. cultural effects). Thus, we assess whether what is typically discussed as a cultural effect is actually due to individual-level attitudes and the extent to which moderation of the effects of ECEC expansion on women's employment is mediated by individual attitudes. Furthermore, we examine whether the effects of ECEC expansion on women's labour market participation depend not only on individual attitudes but also on the relevance of these attitudes with respect to the cultural context. We examine European countries and focus on regional variation over time in gender norms and ECEC provision. All European countries exhibit significant within-country regional differences in ECEC coverage (Scherer & Pavolini, 2023), both in terms of levels and changes over time, making aggregate national measures inappropriate. These within-country differences are partly related to the fact that ECEC provision is typically a decentralized policy, characterized by a strong autonomous role for regional and local governments (Keck & Saraceno, 2013). Moreover, comparisons between countries are likely affected by unobserved heterogeneity, complicating the ability to rule out alternative explanations for the documented associations, while our analytical strategy allows for more robust empirical tests, enabling the analysis of mechanisms related to women's behaviours, policy and cultural factors. We operationalise the concept of (regional) gender care culture in two different ways: through responses to a survey question regarding preferred motherhood roles (see next section) and through religious identification. All data are collected at the regional level.

In line with previous literature, we expect that an increase in ECEC service provision will lead to an increase in women's employment, albeit in different ways. First, we expect that (regional) gender care culture will moderate the effect of increased ECEC service provision (H1a). Specifically, we anticipate that in *less* traditional gender care cultures, an increase in ECEC provision will correspond to a stronger increase in women's labour market participation (H1b), as the cultural setting does not impede ECEC acceptance or mothers' employment. Furthermore, we expect that this effect of gender care culture is not merely compositional but contextual (H1c). In other words, it is not simply the result of the varying relative distribution of individuals with different attitudes toward gender roles in each region but rather the result of regional characteristics. Therefore, we expect the moderation to remain relevant even after controlling for individual attitudes.

In addition, we formulate expectations about who might benefit most from an increase in formal childcare provision. We predict that 'socio-cultural innovators', that is, individuals with less traditional gender attitudes compared to others in the same geographical area (region), will benefit the most from institutional interventions that increase the supply of ECEC services (H2a). Moreover, we expect that this effect will be even stronger for 'socio-cultural innovators' in relatively traditional gendered care cultural contexts (H2b). Overall, we hypothesise that ECEC policies will have a significant 'reinforcing' and 'supporting' effect on individuals who are innovators, especially in traditional settings, and that this effect will ultimately sustain their progressive attitudes.

3 Data and Methods

3.1 Data

The study relies on multiple data sources to examine the relationship between ECEC provision, cultural values and women's labour market participation. At the micro-level, we used data from the European Social Survey (ESS, Rounds 1–9, spanning the years 2002–2018) (European Social Survey, 2018). The ESS provides detailed individual-level data on various socio-demographic conditions and attitudes through repeated cross-sectional surveys that have been conducted biannually across European countries since 2002. This information was integrated with contextual, macro-level data measured at the regional level: one dataset comprises measures on public ECEC services sourced from national and regional statistical offices; the other collects information on the 'culture of care' from the European Value Study (EVS). Harmonizing these three sources allowed us to consider 182 regions across 19 countries from 2000 to 2018. We deliberately limited the analysis to the pre-pandemic years.

Not all European countries participated continuously in the ESS, and we excluded countries with fewer than two observed years. In the Appendix, Table 2 provides information on the country-years on which the analysis is based, while Table 3 details descriptive statistics of the main variables in the analytical sample. Missing values are deleted listwise from the models.

For the analysis, we selected women aged 18 to 45 years, excluding those who were in education, retired, had permanent disabilities or had missing information on education. The initial analytical sample, drawn from 19 European countries, consisted of 47,780 women. After we excluded those cases that did not include valid information on all individual-level control variables, this number was reduced to 30,746.

We investigated four (micro-level) dependent variables related to outcomes in female employment status: (i) labour market activity (active versus inactive), (ii) employment (employed versus not employed, including the inactive and unemployed), (iii) full-time employment (individuals working 30 contracted hours or more per week in their main job compared to part-time employment), and (iv) part-time employment (individuals working fewer than 30 contracted hours per week in their main job compared to full-time employment). These variables were calculated from self-reported activity during the seven days prior to the interview. Among the employed, we considered employees, self-employed individuals and those working for family businesses.

Our two main explanatory variables at the macro level – public ECEC provision and gender care culture – were measured at the regional level at various time points. We restricted public ECEC provision to services for children under the age of 3, which are generally more economically accessible to families than private formal childcare. We proxied childcare coverage by public childcare usage as this data is available. Although usage may not perfectly represent coverage, it serves as a good proxy due to the undersupply of early childcare services. The information on annual public childcare usage rates for children aged 0 to 2 years at the regional level – usually Eurostat NUTS2 (Nomenclature of Territorial Units for Statistics) – covers nearly 20 years. There is considerable variability across regions, within countries, and over time, ranging from 0 to 90%, with a generally positive trend observable across most contexts.

We used two indicators to operationalise gender care culture: items measuring the 'appropriate' form of childcare provision and an item measuring religious affiliation. Both indicators are derived from the EVS (2022), which provides representative information on a wide range of human values, including attitudes toward care providers across European populations and their changes over decades. We proxied cultural values by referring to the aggregate predominance of specific attitudes at the regional level. To observe changes, we employed information spanning the years 1999–2001, 2008–2010 and 2017–2020 and used values from the early 1990 s as additional controls. Following previous literature (e.g. Pavolini & Van Lancker, 2018), we based the first operationalisation of care culture on the item: '*A preschool child is likely to suffer if his or her mother works*', rated on a scale from (1) 'agree strongly' to (4) 'disagree strongly', with additional options for 'don't know' and 'no answer'. By applying appropriate weights, we considered the percentage of individuals who strongly agree or agree with this statement at the regional level as an indicator of 'gender care culture', based on the premise that higher agreement rates reflect a societal preference for traditional gender roles that view mothers as primarily responsible for caregiving and working outside the home as potentially harmful to children. This variable was the primary one in the EVS that was available over time and pertained to our topic. For regions where data was unavailable for a certain point in time, we interpolated values by averaging the previous and following years or using the last available data. In the analysis, we controlled for the use of interpolated values through a dummy variable. Table 1 reports the trend in gender care culture across countries from 1999 to 2020: The overall decline in the indicator reflects changing societal attitudes toward more equal gender roles and childcare responsibilities. Gender care culture is incorporated into the analysis with the observed regional mean values as a time-varying variable. We attribute values observed for 2017–2020 to the

Table 1 Gender care culture at the country level over time (1999–2020)

	EVS Rounds		
Country	Round 3, 1999-2001	Round 4, 2008-2010	Round 5, 2017-2020
AT	76.3%	67.9%	49.8%
BE	51.9%	38.5%	38.5%
BG	61.6%	42.9%	28.6%
CZ	47.2%	41.3%	32.3%
DE	59.2%	51.1%	30.5%
DK	18.6%	8.6%	9.1%
ES	50.4%	47.0%	26.2%
FI	40.8%	21.8%	15.4%
FR	56.5%	39.3%	33.1%
GB	45.3%	35.4%	25.0%
HR	63.0%	48.7%	40.3%
HU	62.9%	57.1%	49.6%
IT	80.4%	77.4%	55.8%
NL	46.1%	39.8%	22.5%
NO	36.2%	36.2%	26.5%
PO	76.8%	62.4%	51.8%
SE	37.4%	20.2%	15.8%
SI	46.5%	35.9%	29.3%
SK	62.7%	38.2%	35.0%
Total	57.9%	49.0%	34.8%

Data for Austria and Norway in Round 3 is an average of data in Round 2 and Round 4; data for Belgium in Round 5 refers to Round 3

Source: EVS Rounds 2–5 (2022), weighted statistics

years between 2014 and 2018, those for 2008–2010 to the years between 2008 and 2012, and those from 1999 to 2001 to the years between 2002 and 2006.

The second operationalization of care culture utilised self-reported religiosity, that is, the share of individuals declaring themselves to be religious in the EVS. Religiosity served as a robustness check for our findings, given that it is a measure less susceptible to endogeneity problems (Heyne, 2017). Rather than using information directly from the ESS, we preferred to proxy cultural values from the EVS since it has been deliberately designed to measure cultural change in an internationally comparative manner (Luijkx et al., 2022).

At the micro-level, we measured individuals' gender role attitudes, relying on the ESS item regarding the 'importance of following traditions and customs', which was assessed on a scale from 1 to 6, ranging from 'very much like me' to 'not at all like me'. Although this question is quite generic, it is present in all ESS waves and was the only means of investigating individual attitudes over the entire period. We categorised individuals into three groups: 1 = not at all like me, 2 = somewhat like me, and 3 = like me or very much like me. As a supplementary measure, we also used the item, 'Men should have more right to jobs than women when jobs are scarce'. This question was included only in the ESS waves for 2004, 2008, 2016 and 2018, implying that these analyses are limited to roughly 30% of the sample for our main analysis. Again, individuals for this variable were grouped into three categories.

We controlled for age, age squared and immigration background (native of the country or not), as well as characteristics of household composition and women's level of education. Household composition was assessed by number of members, a proxy for the presence of a partner, and the presence of children under 6 years. Results did not change when this age limit was extended to children under 16.

3.2 Analytical Strategy

Estimates of the relevance of ECEC for women's employment are based on region-specific within-variation over time, which brings us closer to assessing a potentially causal relationship. Focusing on regional variations helps control for potentially confounding national trends. Given the nested structure of the data, cross-classified multilevel models are employed (Rabe-Hesketh & Skrondal, 2022; Schmidt-Catran & Fairbrother, 2016) based on region-years. This specification does not accommodate the application of weights. Robustness checks with simpler models that applied weights led to no substantively different results. Results from linear probability models are reported, which are computationally less demanding. To assess the effects of public childcare on women's employment situation, a demeaned measure of childcare coverage is used (Giesselmann & Schmidt-Catran, 2020; Halaby, 2004), which means that the main explanatory variable was expressed as a deviation from each region's average. This approach reduces biases stemming from time-constant unobserved factors that could influence both ECEC availability and employment. Despite multi-level specification, such confounders may still be present and could include factors such as the economic development of the region.

The analytical strategy included two steps. First, we tested the extent to which gender care culture values moderate ECEC effects. We reported results from models that include interaction terms between ECEC and cultural values, measured at the regional level as traditional gender care culture or religiosity. In some models, countries were included as fixed

effects, but this did not result in any relevant differences in the estimates. Three different model specifications for the four outcome variables are distinguished:

- Model 1 (M1) regresses employment outcomes on ECEC provision interacted with gender care culture, while controlling for age, age squared, immigration status and a flag for imputed cultural values (see above);
- Model 2 (M2) adds country fixed effects, the value of traditional gender care culture as observed prior to the study's time window (i.e. in the 1990s) and the average regional ECEC level over the two observed decades;
- Model 3 (M3) controls also for household composition, education of women and individual attitudes.

We replicated all models measuring gender care cultural values by using both the specific item measuring traditional gender care culture and religiosity.

In the second step, we analysed the moderating role of individual-level attitudes, focusing exclusively on employment. We presented a three-way interaction among ECEC, gender care cultural values (in the form of traditional care culture) and individual-level attitudes. The cross-classified multilevel models included a random effect for individual attitudes, incorporated in the cross-level interaction. For this analysis, we reported only results that contain the controls included in model M3 from the previous step, as we found no substantive differences from the other model specifications.

4 Results

In general, the results confirm that an increase in ECEC supply helps women to be active in the labour market and, more specifically, to find employment. Moreover, an increase in ECEC provision fosters full-time employment while decreasing part-time employment, suggesting that women transition into full-time roles as public services expand. But what about the role of gender care culture?

4.1 Cultural Values as a Moderator of ECEC Effects on Female Labour Market Participation

Figure 1 shows that the effects of an increase in ECEC provision on female labour market participation are clearly dependent on the dominant gender care cultural values in the region (also net of country fixed effects). This supports hypothesis H1a, confirming that regional gender care culture significantly moderates the consequence of ECEC provision on women's employment outcomes. While we can reasonably interpret the ECEC parameters as 'effects', attributing their heterogeneity to cultural differences between contexts is more complex.[2] Reassuringly, the results remain stable when accounting for possible confound-

[2] The main effect of cultural values on women's employment is neither statistically nor substantively significant – a finding that still could be biased due to omitted variables. However, sensitivity analysis (Diegert et al., 2025) in this sense did not suggest biases. It should be noted that country fixed effects and initial cultural values are included among the regressors. We thank one of our reviewers for suggesting these additional checks.

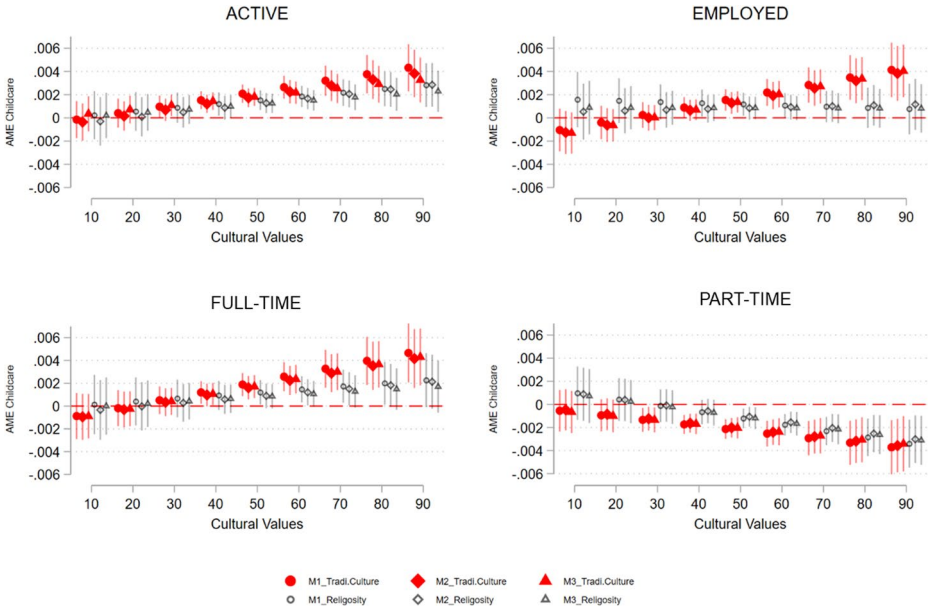

Fig. 1 Effects of Regional Public ECEC Provision on Women's Labor Market Situation and Moderation by Regional Care Culture: Traditional Culture and High Religiosity (years 2002–2018; Average Marginal Effects and 95% C.I. reported). Source: ESS (Rounds 1–9), national and regional statistical offices (2000–2018), EVS (Rounds 2–5). Weighted estimates

ers, as evidenced by minimal changes across model specifications (M1–3). M2 includes values of traditional gender care culture as observed prior to the study's time window and country fixed effects, which reasonably account for structural characteristics of the context, such as labour market structure, the overall generosity of welfare spending and the broader legal-institutional context.

At the same time, hypothesis H1b is not supported. Instead, the positive effects of increased ECEC supply on female labour market participation are observed primarily in traditional gender care culture contexts (represented by higher values on the x-axis in Fig. 1), while there appears to be almost no effect in less traditional contexts. This result suggests that increases in ECEC provision are effective not only for female labour market participation but also as a tool for socio-cultural modernisation in relatively traditional societies. To rule out the possibility that the reported moderation was actually due to levels of ECEC coverage, which are known to relate to cultural values, we included among the controls (from M2 onwards) the average level of ECEC coverage in the region. This is especially relevant in light of the 'saturation' argument, which posits that ECEC effects may diminish above a certain level of ECEC coverage. However, the results did not change, which confirms that we captured cultural values rather than some structural characteristics. Additionally, as a further control, we excluded from the analysis region-years with ECEC levels above 40%. While confidence intervals necessarily increased, the overall pattern remained constant, showing stronger effects in more traditional contexts (see Figure 4 in the Appendix).

Furthermore, the results show that the significance of gender care culture is not merely compositional but relates to genuine contextual factors. The moderation effect of gender

care culture was not due to individuals' attitudes (and preferences, as realised through family structure or education) but appeared as a real contextual effect, thus supporting a cultural interpretation. In fact, M3 in Fig. 1 accounts for individual-level attitudes, which theoretically might fully mediate this moderation; however, they do not, as the results remain unchanged. Thus, hypothesis H1c is confirmed.

Two additional findings emerge from the analysis and are presented in Fig. 1. First, all the results hold for all four outcomes considered in the research: being active, being employed, working full-time and working part-time. In other words, gender care culture moderates the effect of an increase in ECEC provision on various facets of female labour market participation. Second, the way the concept of gender care culture is defined - through responses to the statement 'children suffer when the mother works' or through individuals' self-assessed religiosity - does not relevantly affect the findings, which remain very similar as shown in Fig. 1 (where these two items are represented by red and grey colours). The only exception regards employment, where there does not seem to be a clear relationship between culture and the effect of ECEC provision when using religion as a culture proxy.

4.2 ECEC Provision, Cultural Values and Socio-Cultural Innovators

So far, heterogeneities across (regional) cultural contexts have been considered. Depending on their attitudes and beliefs, however, individuals might respond differently to an increase in ECEC services, as suggested by our second hypothesis, in which we proposed that individuals with less traditional attitudes ('socio-cultural innovators') might particularly benefit from ECEC services compared to others in the same geographical area (H2a). Results partially support this hypothesis. Individuals who report attributing little importance to traditions are slightly more responsive to an increase in ECEC services in their region in terms of employment (Fig. 2).

However, we find no support for the idea that this result is obtained mainly in regions where traditional values predominate (H2b not confirmed). Figure 3 reports the results of the three-way interaction between ECEC provision, cultural values (in the form of traditional care culture) and individual-level attitudes. Again, we must emphasise that these models account for other potential macro confounders. Results are reported separately for individual attitudes. The left panel measures attitudes based on the item asking about the importance of following traditions, while the right panel examines whether these findings hold when another item – the question of whether men should have more rights to jobs – is used to measure individual (gender) attitudes. To maintain the same scale, the right panel reports results without confidence intervals, given that they overlap and are large. The most traditional individuals are represented in red. None of the differences between individual attitudes are statistically significant. While, contrary to our expectations, there may be some indication that women who hold traditional attitudes would respond more than innovators to an increase in ECEC provision in traditional contexts, any differences are insignificant. In summary, we cannot find support for the idea that there are relevant differences in how individual attitudes shape reactions to ECEC according to the cultural context.

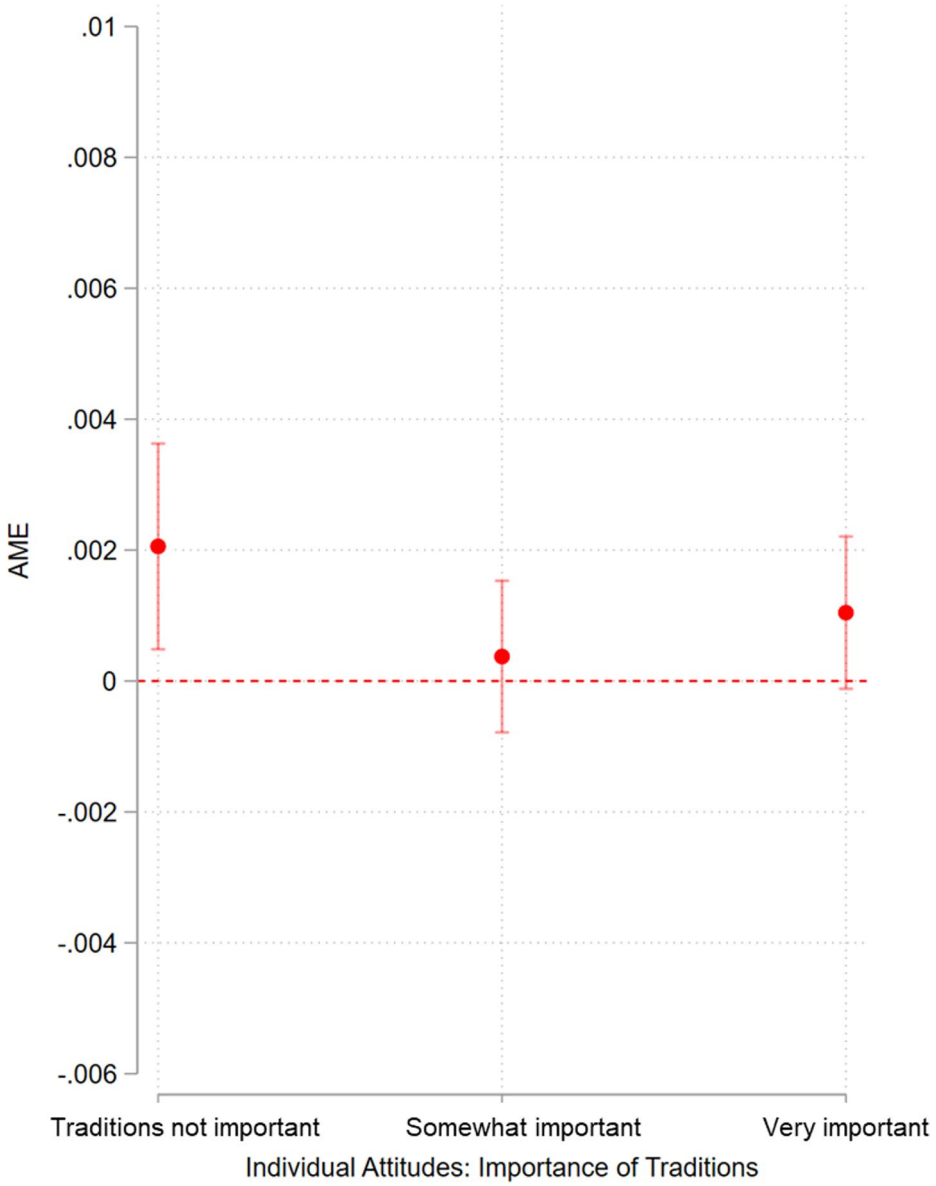

Fig. 2 Effects of Public ECEC Increase on Employment by Individual Attitudes. The Importance of Tradition (years 2002–2018; Average Marginal Effects and 95% C.I. reported). Source: See Fig. 1. Note: The model reported in Fig. 2 includes the controls from Model 3 in Fig. 1 and accounts for cultural values (without interaction)

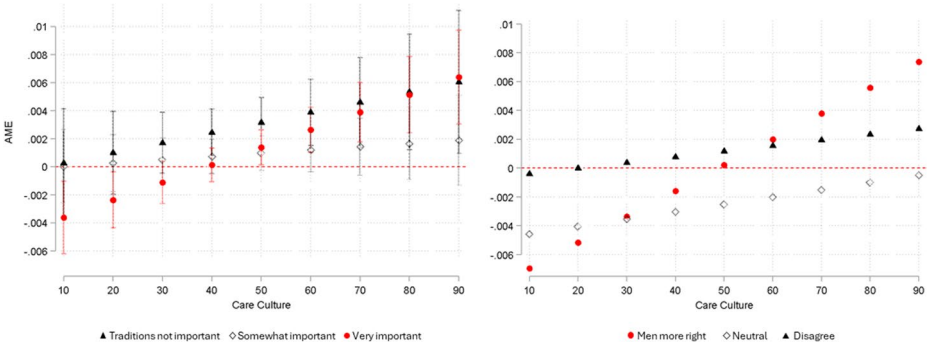

Fig. 3 Effects of Regional Public ECEC Provision on Women's Employment, Moderated by Regional Care Culture and Individual Attitudes (years 2002–2018; Average Marginal Effects reported). Importance to follow traditions (N=46,369 - 95% C.I.). Men should have more rights to jobs than women when jobs are scarce (N=21,845 - no C.I.). Source See Fig. 1

5 Conclusions

Previous research has documented the relevance of both structural factors, such as formal childcare provision, and cultural contexts, including care culture and individual attitudes, for women's employment outcomes. However, these factors have rarely been examined jointly. This study addressed this gap in the existing literature through a joint investigation of structural and cultural factors and their interaction. We considered changes in regional childcare services and gender care culture, which we operationalised through commonly used items in the European Value Study and a measure of religiosity. Importantly, we explicitly distinguished between cultural values and individual attitudes. To make our findings more robust, we based our contextual estimates on regional, time-varying information, thereby leveraging heterogeneity across contexts to provide more rigorous empirical tests for analysing the mechanisms relating to women's behaviours, policies and cultural factors. To provide a comprehensive picture, we assessed the influence of these factors on four different labour market outcomes: being active, being employed, working full-time and working part-time.

We expected gender care culture to moderate the effects of ECEC service provision on women's employment and that certain social groups, particularly those with less traditional attitudes, might benefit the most. Expectations were only partially confirmed. While gender care culture moderates the positive effects of an increase in ECEC provision on women's employment, the effects are particularly evident in contexts with traditional gender care cultures. Almost no effect is detectable in very non-traditional contexts, which contradicts our expectations and those in some of the literature. This result does not appear to be due to a 'saturation effect', whereby ECEC effects diminish above a certain level of formal childcare coverage typical of less traditional regions. Furthermore, gender care culture is confirmed as a genuine contextual effect rather than merely an outcome of compositional effects linked to individual attitudes.

The positive role of gender care culture is similar across all four labour market outcomes, regardless of how the gender care culture concept is operationalised. The only exception is

the outcome related to women's employment, where a clear relationship between culture as measured by religion and the effect of ECEC provision is not evident.

Our expectations that 'socio-cultural innovators' – individuals who hold less traditional attitudes than are typical of their region – would benefit most from institutional interventions in the form of increased ECEC services found little support. Instead, less traditional individuals were only slightly more responsive in terms of employment to an increase in ECEC services in their region than traditionalists. Additionally, individual attitudes did not significantly influence the moderating role of cultural contexts on childcare effects, and increasing childcare availability did not yield greater employment increases for 'socio-cultural innovators' living in relatively traditional regions. If anything, there are indications that women with traditional gender views living in traditional regions would benefit more (in terms of employment) from an increase in ECEC provision. Obviously, also this study is not free of limitations and a causal interpretation of the cultural context measure remains challenging.

These findings highlight the interaction between structural and cultural factors in shaping women's employment outcomes, suggesting that the results of social policy interventions, such as increases in ECEC, critically depend on cultural contexts. Importantly, policies that foster equality in employment participation seem to be particularly effective in contexts where gender equality is not supported by cultural values. It follows that family policies focused on expanding ECEC provision contribute positively not only to enhancing female labour market participation in various forms but also to socio-cultural modernisation.

Clearly, this last finding highlights a policy conundrum whose solution extends beyond the present study. While public ECEC provision has a stronger effect on female labour market participation in traditional contexts, the prevailing traditional gender culture in such environments is likely to hinder policymakers from pursuing an expansion of formal childcare provision for political and electoral reasons. Such measures may not be perceived as important and could even be framed as harmful by significant parts of the regional electorate. Consequently, the question that arises at the conclusion of the paper is the following: How can policy innovation be introduced in (regional) contexts that would benefit most from such innovation, yet are characterised by a gender culture that may view this change negatively—or, at best, neutrally—in political terms?

While our focus was on the social outcomes of family policy (specifically, female labour market participation and ECEC services) and the moderating effect of regional cultural values, future research might want to take a closer look at the politics of multilevel governance of ECEC policies to further disentangle the politics of family policies. Particularly worthwhile would be enquiring into how family policy innovation can take place within countries that exhibit regional differences in care culture and, as highlighted by the present study, are often characterised by significant decentralization of decision-making related to the initiation and expansion of public ECEC provision to regional and local governments.

Appendix

Table 2 Country-year coverage of the analytical sample

	2002	2004	2006	2008	2010	2012	2014	2016	2018	Total
AT	565	486	574	452	469		360	403	442	3751
BE	348	373	364	327	340	348	323	316	318	3057
BG			278	375	366	381			280	1680
CZ	191	549		381	431	350	452	468	436	3258
DE	580	561	515	433	528	445	447	411	338	4258
DK	304	284	232	257	227	213	214		204	1935
ENG							356	310	358	1024
ES	361	370	418	582	382	354	316	315	267	3365
FI	362	352	301	350	291	318	288	258	248	2768
FR	337	382	420	421	349	344	331	325	325	3234
HR				295	262				344	901
HU	312	284	263	291	330	423	327	303	318	2851
IT	270	299				179		414		1162
NL			387	354	362	330	347	305	260	2345
NO	395	327	325	289	258	256	218	232	197	2497
PL	426	358	347	318	337	359	314	331	293	3083
SE	328	333	341	325	241	290	280	231	207	2576
SI	261	259	252	244	239	197	205	214	238	2109
SK		320	392	332	348	378			156	1926
Total	5040	5537	5409	6026	5760	5165	4778	4836	5229	47780

Table 3 Mean values of the main variables on the analytical sample

	Age (18-45)	Born in country (1/0)	Education (0-2)	Partner (0/1)	Children <6 in household (0/1)	Importance to follow traditions and customs (1-3)
AT	33.84	0.88	1.11	0.54	0.24	2.29
BE	33.35	0.86	1.31	0.62	0.34	2.35
BG	34.53	1.00	1.13	0.60	0.29	2.64
CZ	34.33	0.98	1.10	0.58	0.27	2.37
DE	34.53	0.87	1.12	0.62	0.28	2.22
DK	35.01	0.91	1.33	0.68	0.39	2.48
ENG	33.96	0.77	1.19	0.37	0.50	2.11
ES	34.25	0.86	0.95	0.60	0.29	2.32
FI	34.00	0.94	1.48	0.67	0.41	2.21
FR	34.20	0.89	1.19	0.61	0.43	1.99
HR	33.94	0.92	1.15	0.42	0.32	2.50
HU	33.61	0.98	1.10	0.59	0.26	2.43
IT	34.67	0.90	1.04	0.58	0.21	2.61
NL	34.64	0.88	1.15	0.61	0.44	2.28
NO	34.01	0.86	1.47	0.66	0.39	2.33
PL	32.77	1.00	1.21	0.65	0.32	2.65
SE	33.88	0.87	1.38	0.67	0.38	2.22
SI	34.65	0.92	1.22	0.62	0.27	2.42
SK	33.52	0.98	1.14	0.62	0.32	2.51
Total	34.05	0.91	1.20	0.61	0.33	2.34

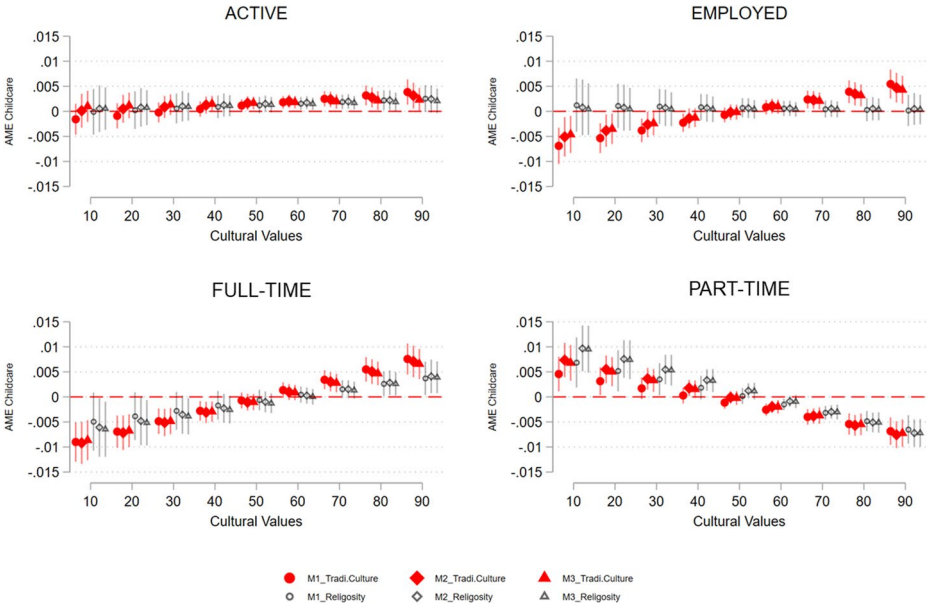

Fig. 4 Effects of Regional Public ECEC Provision on Women's Labor Market Situation and Moderation by Regional Care Culture: Traditional Culture and High Religiosity (years 2002–2018; Average Marginal Effects and 95% C.I. reported; only regions with ECEC levels below 40%)

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Data Availability The data used in this study are publicly available and can be accessed from the following sources: the ESS website (www.europeansocialsurvey.org), which contains micro-level data from the European Social Survey (ESS) and is accessible upon registration; the EVS website (www.europeanvaluesstudy.eu), which contains European Values Study (EVS) data for measuring gender care culture; and Eurostat or national and regional statistical offices, which contain regional-level data on early childhood education and care (ECEC).

Declarations

Competing Interests The authors have no competing interests to disclose.

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