UNIVERSITÀ DEGLI STUDI FIRENZE
DISIA
DIPARTIMENTO DI STATISTICA, INFORMATICA, APPLICAZIONI "GIUSEPPE PARENTI"

The End of an Era The Vanishing Negative Effect of Women's Employment on Fertility

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DISIA WORKING PAPER
2025/02

The End of an Era

The Vanishing Negative Effect of Women's Employment on Fertility

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Abstract

This paper addresses whether women's employment in the 21st century remains a barrier to family formation, as it was in the 1980s and 1990s, or—similar to men's—it has become a prerequisite for childbearing. We address this question through a systematic quantitative review (meta-analysis) of empirical studies conducted in Europe, North America and Australia. We selected 94 studies published between 1990-2023 (N=572 effect sizes). Our analysis uncovers a fundamental shift in the relationship between women's employment and fertility. What was once a strongly negative association has become statistically insignificant in the 2000s and 2010s—and even turned positive in the Nordic countries and parts of Western Europe (France, Belgium, and the Netherlands). This shift is evident both among childless women and mothers and has occurred across all analyzed country clusters, except in the German/Southern European group, where the relationship has remained negative. These findings challenge longstanding assumptions about work-family trade-offs and suggest a reconfiguration of the economic and social conditions underpinning fertility decisions in contemporary high-income societies. The paper calls for a reconceptualization of the employment-fertility relationship and development of a new theoretical framework that better captures these evolving dynamics in contemporary high-income societies.

Keywords: Women's employment; Fertility; High-income countries; Meta-analysis.

Funding: The work by Anna Matysiak has been financed by the ERC grant "Globalisation- and Technology-Driven Labour Market Change and Fertility" (LABFER, grant agreement No. 866207). The work by Daniele Vignoli received funding from the European Union–Next Generation EU, in the context of the National Recovery and Resilience Plan, Enlarged Partnerships "Consequences and Challenges of Ageing", Research Program Age-It (Aging Well in an Aging Society, PE8-B83C22004800006).

Acknowledgments: We acknowledge the assistance of Anna Wielgopolan and Samuele Milone in conducting the literature search.

This Working Paper is also available at the WNE (Faculty of Economic Sciences) Working Paper series of the University of Warsaw at this link.

Introduction

For decades, the relationship between women's labor market participation and fertility has been at the center of demographic research and policy debates. In the 1970s and 1980s, the remarkable expansion of female employment coincided with a steep decline in fertility rates across high-income countries (Bhrolchain 1993; Bernhardt 1993; Rindfuss & Brewster 1996; Ahn & Mira 2002; Engelhardt et al. 2004). At that time, women faced a stark choice between paid work and family: childcare responsibilities overwhelmingly fell on mothers, with limited institutional or spousal support, forcing many to choose between career advancement and motherhood (Becker 1993; McDonald 2000). Faced with high opportunity costs, women increasingly postponed or reduced childbearing to maintain their labor market attachment (McDonald 2000; Goldscheider et al 2015). A meta-analysis by Matysiak and Vignoli (2008), synthesizing 29 studies from Europe and the US conducted between 1990 and 2006, confirmed that employed women were generally less likely to have children, particularly in countries with weak institutional support for working parents.

Since then, the conditions for combining employment and parenthood have evolved significantly (Ferragina & Seeleib-Kaiser 2015; Goldscheider et al 2015). Policy reforms—albeit unevenly implemented—have sought to reconcile employment and family life, expanding childcare provisions and individualizing parental leave entitlements to encourage paternal involvement (Anxo et al. 2011; Plantenga & Remery 2013; Goldscheider et al 2015). Nordic countries led the way, fostering a more supportive environment for working mothers, but even in other high-income nations, dual-earner households have become a fundamental part of the contemporary reality. These developments raised the possibility that the longstanding trade-off between women's employment and childbearing might have weakened or even reversed. Rising economic instability and stagnating male wages (Plantenga & Remery 2013) may have further contributed to this change, eroding the Beckerian model of household specialization (Becker 1993) and reinforcing women's economic indispensability (Alderotti et al. 2021).

While since the Great Recession much of the recent literature in the field of labour market dynamics and fertility has focused on employment instability and mounting economic uncertainty (Vignoli et al. 2020; Alderotti et al. 2021), the role of women's labor market participation in fertility decisions has received much less systematic attention. Existing evidence is fragmented across countries and birth orders, with studies reporting highly heterogeneous findings. This raises a fundamental question: do employed women in the 21st century are still less likely to give birth compared to non-employed women, as was the case in the 1980s and 1990s? We address this question

through a systematic quantitative review (meta-analysis) of empirical studies published in high-income countries (Europe, North America, and Australia) over the last 33 years (1990-2023).

Data and Methods

Meta-Sample

In order to conduct the meta-analysis we started from a thorough Scopus search using all possible combinations of keywords in three domains: gender (female or women), labor market (work, employment, or labor) and fertility domain (childbearing or fertility). We performed the search among publications in Social Sciences, Economics, Econometrics and Finance, Psychology, Business, Management and Accounting and Multidisciplinary, published between 1970 and 2023. Second, we checked references within retrieved publications. Finally, we sent our list of publications to 20 well-known international experts on the topic, asking them to check whether any important contributions were missing.

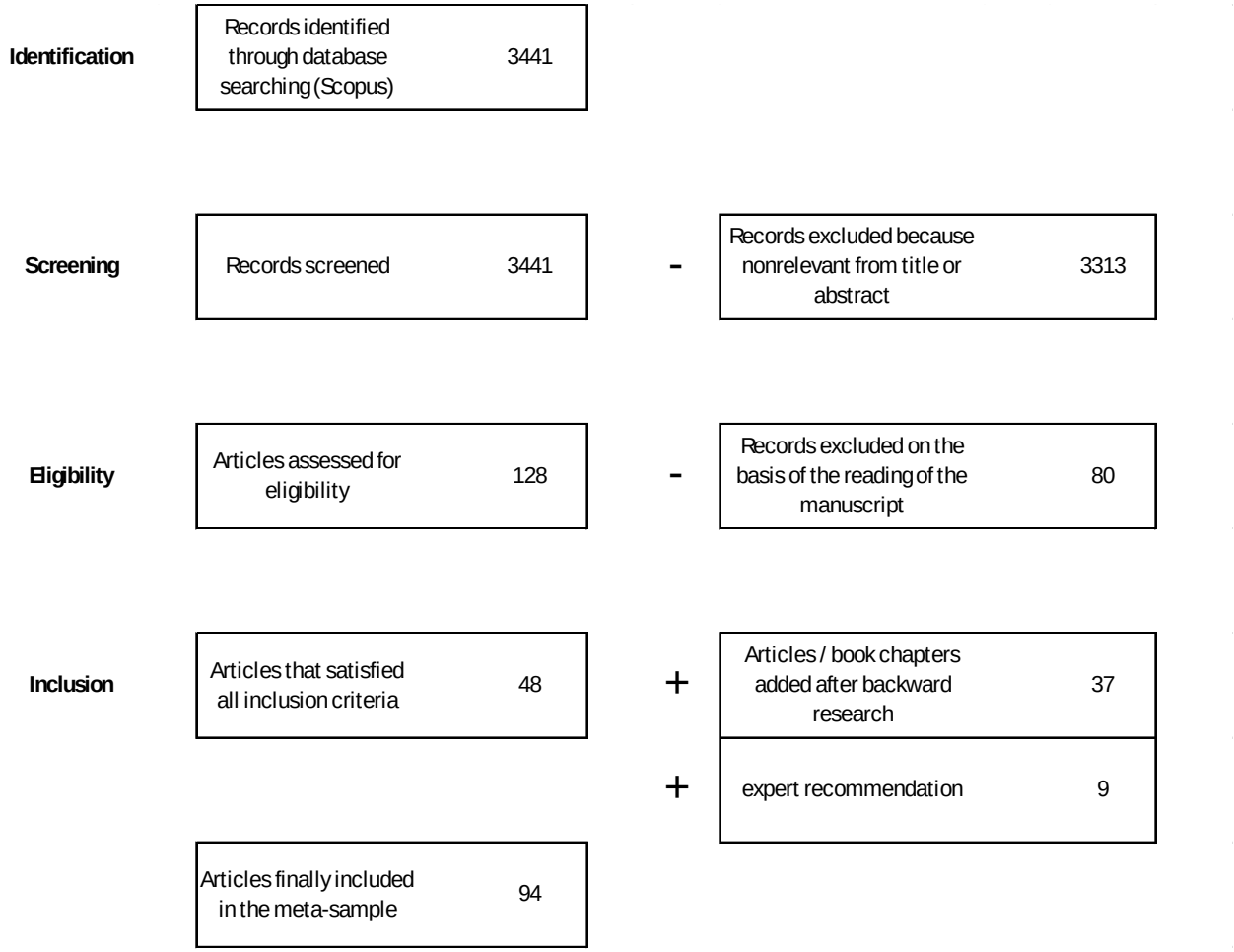
The Scopus search returned 3,441 publications. They were all assessed for eligibility, meaning they were evaluated based on our predefined inclusion and exclusion criteria to determine their relevance to the study. This assessment was conducted by reviewing the title and abstract of each publication. As a result of this eligibility check, 128 publications were deemed relevant and included for further analysis. Out of them, we retained only those which met all our inclusion/exclusion criteria. This left us with 48 studies. In addition, we included 30 studies based on the backward search through reference lists and 9 on the basis of expert recommendations (see Figure 1). Altogether, we selected 94 studies, which are listed in Appendix A.

To obtain comparable effect estimates, we included studies that produced effect estimates measured in terms of odds ratios (ORs) or relative risks (RRs). We (1) restricted the search to studies conducted in high-income countries (defined according to the World Bank classification), (2) included only articles and book chapters, (3) included only studies that provide sufficient information to assess an effect of women's employment on fertility behaviors in a quantitative manner, hence restricting the search to micro-level longitudinal studies, (4) excluded studies that estimated models using pooled country samples as they were not directly comparable to the others; (5) considered articles in English only. We had to exclude East Asian countries after the article search because we retrieved only one study for the region.

Some articles reported more than one effect estimate: either because they presented results from stepwise modelling, specific analyses for more than one country or for subgroups of women

(e.g. by age). We coded all these estimates together with their standard errors. As a result, we obtained a final sample of 572 effect estimates. From the 94 studies we collected 572 effect size estimates. The majority of effect size estimates come from Nordic countries and Southern Europe (128 estimates per each region), followed by Germany (103 estimates), Anglosphere (82 estimates), remaining Western European countries (69 estimates) and CEE countries (62 estimates). Most of the estimates covered mainly the 1980s and 1990s (361 estimates), fewer the 1950s, 1960s and 1970s (135 estimates) and the fewest the 2000s and 2010s (76 estimates).

Figure 1. Flow chart of the articles' selection process



Effect sizes

Our effect estimates consist of natural logarithms of RRs or ORs of women's employment/ vs. non-employment. Employment was measured in different ways in original studies (as overall employment

/ full-time/part-time and permanent / temporary employment), so was non-employment (i.e. non-employment, unemployment, inactivity, being a housewife). We considered all these effect estimates and controlled for the different definitions of "being employed" in the meta-regressions.

Together with the effect size estimates we coded their standard errors. Some studies did not report statistics that would have allowed us to compute the standard error (e.g., t statistics or p value). As dropping these studies could lead to sample selection biases, we made the following assumptions. When the result was marked significant and no other details were available, we set the p-value equal to .05. When the study used register data, we set a p value of .05. When the significance level was marked with asterisks only, we assumed that the p value was equal to the midpoint of the interval between the significance level corresponding to the number of asterisks and the next lower one. When the result was not significant, we set the p value at .5.

Meta-Analyses

We specified random-effects meta-analysis models, which accounted for within-study sampling errors (measured by the estimated standard errors reported in the papers) and the heterogeneity of the effect estimates across studies. In this way, we relaxed the assumption that each estimate represented a measure of the same "true effect," allowing for the variation in the effect estimates according to study characteristics (Borenstein et al. 2010). We accounted for the dependence among the effect sizes, originating from the same study, by performing a multi-level random-effects meta-analysis, using the Stata command meta meregress.

Our main explanatory covariates where (1) the country cluster, (2) calendar period covered primarily by the study and (3) the parity. We distinguished six country clusters: Nordic (Denmark, Finland, Norway and Sweden), German-speaking (Germany), remaining Western European countries (France, Belgium and the Netherlands), Southern Europe (Italy and Spain), Central and Eastern Europe (Bulgaria, Czechia, Hungary, Lithuania, Poland and Russia) and the Anglosphere (Australia, Canada, the UK and the US). The calendar period variable refers to the mean calendar period covered by the study and consists of three groups: 1950-1979, 1980-1999 and 2000-2020.

In addition we controlled for other study characteristics such as: the definition of employment (general, temporary vs permanent, full-time versus part-time) and non-employment (general, unemployment, inactive), a dummy indicating whether the sample was selected toward older women, a dummy indicating whether the sample was selected toward women in unions (cohabitation and marriage), a set of dummies indicating whether the study control for respondent's social background, partner characteristics, division of unpaid work in the household and migration status.

Our full model estimates from this basic model are presented in Appendix B, Table B1. In addition, we estimated several other specifications in which we (a) interacted the country cluster with the parity, (b) interacted the time period with the parity, (c) interacted the country cluster with the time period. These additional models allowed us for investigating whether (a) the cross-country heterogeneity in the estimated effect sizes varied by parity, (b) the temporal change occurred across all parities, (c) the temporal change occurred to the same extent across all country groups. The results from these additional analyses are presented in Figures 2-4 and the full model estimates are available on request.

Publication bias

Because studies reporting significant results could have a higher probability of being published than those not finding significant evidence, a typical first step in the meta-analysis is to test for such a publication bias (Card 2012). In order to test for publication bias, we used funnel plots and an Egger's test (Egger et al. 1997). Given the evidence of publication bias ($p = 0.0003$), which persisted even after accounting for between-study heterogeneity ($p = 0.01$). We addressed this bias by including the variance of the effect estimates as a moderator in our meta-regression following Moreno et al (2009). It is noteworthy that the publication bias suggests an underrepresentation of studies that report positive effects of women's employment on fertility, across different time periods and countries.

Robustness check

To assess the robustness of the meta-regression estimates, we followed a leave-one-out meta-analysis approach. In addition, given that our meta-study includes a large number of studies we repeated our meta-analysis 1,000 times, each time excluding 10% of studies. The results of this sensitivity checks are presented in the Appendix B (Figures B1-B6).

Replication

We provide a replication package which is to deposited at Zenodo once the paper is accepted for publication. The replication package contains the dataset we constructed and used for this study together with the Stata codes (Stata 18.0). The Stata code is provided in two files: 1) S1. data preparation and models.do – it constructs the main variables needed for the analysis, allows to perform the test for a publication bias and estimate all the regressions. It also allows to reproduce Figures 2-4 and the Table B1. 2) S2. sensitivity.do – it provides codes for performing sensitivity

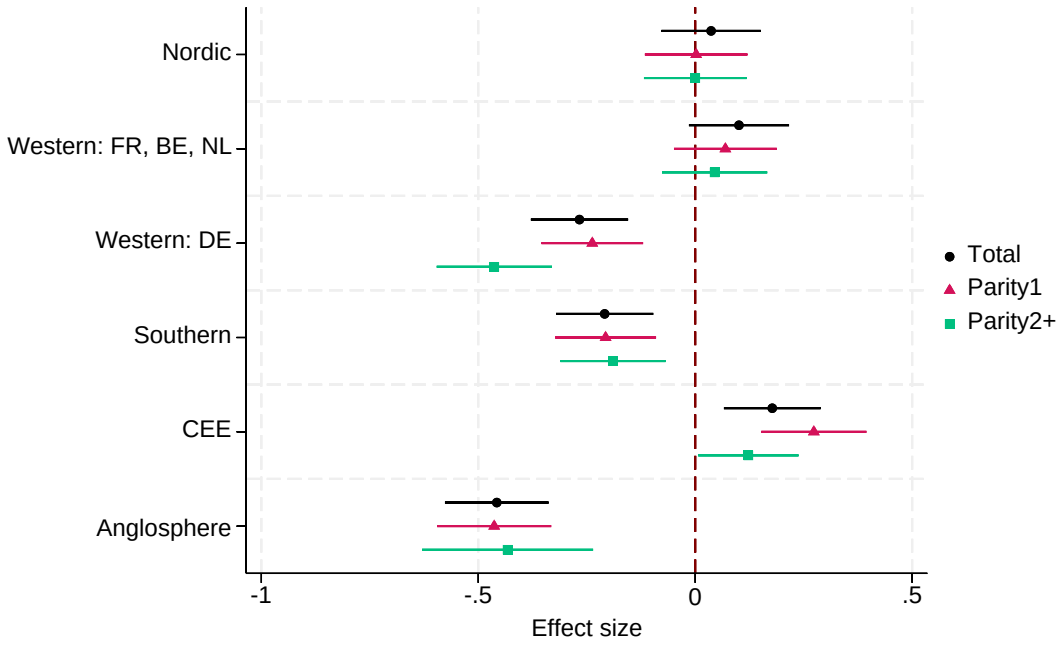
analyses and reproducing the Figures B1-B6. For performing the sensitivity analyses users must first run the data preparation and models.do.

Results

Cross-country heterogeneity

Our study reveals a clear heterogeneity in the relationship between women's employment and fertility, which ranges from negative to positive (Figure 2). Over the whole analyzed period the most pronounced negative association is, on average, observed in the Anglosphere—comprising of Australia, Canada, the United Kingdom, and the United States—with an average effect size (ES) of -0.46, implying that working women are 27% less likely to have children there than those who do not work. This negative relationship is as strong for childless women as it is for mothers. A negative relationship between women's employment and fertility, although weaker, is also found in Southern Europe (e.g., Italy, Spain) and Germany. In Southern Europe, the employment-fertility association remains equally negative for both childless women and mothers, with an average effect size (ES) of -0.21—equivalent to a 19% lower birth rate among employed women compared to those not in the labor force. In Germany, the average negative impact is even more pronounced (-0.23), but it is primarily driven by lower progression to second and higher-order births rather than reduced entry into motherhood. By contrast, the association between women's employment and fertility is, on average, close to zero in the Nordic countries (Sweden, Denmark, Norway and Finland; ES=0.04) and the Western European nations beyond the German-speaking ones (France, Belgium, and the Netherlands; ES=0.10). Such finding involved both childless women as well as mothers. Finally, a clearly positive relationship was found in Central and Eastern European (CEE) countries (i.e., Bulgaria, Czechia, Hungary, Lithuania, Poland and Russia; ES=0.18). This positive relationship is, on average, stronger among childless women than mothers though still prevalent in the latter group.

Figure 2. Cross-country variation in the relationship between women's employment and fertility. Predicted effect sizes by country group, 95% CI



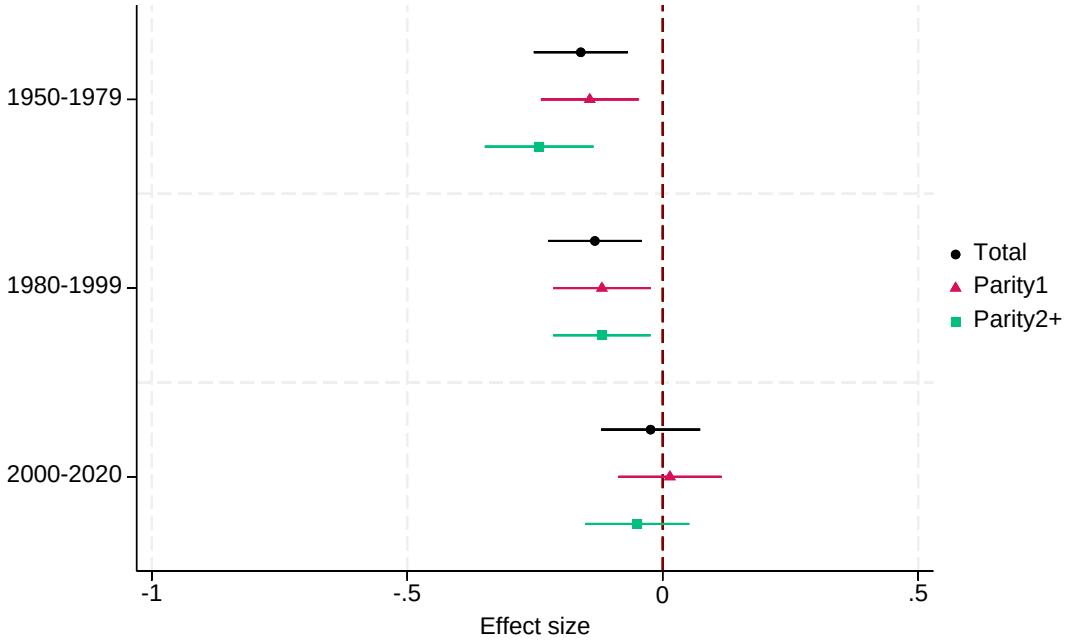
Note: The findings are based on a random effect meta-regression based on 94 studies (572 observations) with effect sizes clustered within a study and country group as an explanatory covariate. The meta-regression by parity is estimated on 88 studies (551 observations), after we dropped studies which were based on all parities. The explanatory covariate in this model is country group interacted with parity. The control covariates include: the definition of employment (general, temporary vs permanent, full-time versus part-time) and non-employment (general, unemployment, inactive), a dummy indicating whether the sample was selected toward older women, a dummy indicating whether the sample was selected toward women in unions (cohabitation and marriage), a set of dummies indicating whether the study control for respondents' social background, partner characteristics, division of unpaid work in the household and migration status.

Temporal shifts

Besides the strong cross-country variation, we also find a clear shift in the relationship between women's employment and fertility over time (Figure 3). In the second half of the 20th century, female employment was strongly negatively associated with fertility behavior, with an average effect size equal to -0.16 in 1950-1979 and -0.13 in 1980-1999. This suggests that working women were approximately 15% and 12% less likely, respectively, to have a child compared to non-working

women—regardless of birth order. However, this pattern appears to have changed in the 2000s and 2010s. During this period, the relationship weakened considerably and approached zero (ES=-0.019). This shift is evident both in first birth transitions (ES = 0.014) and in second or higher-order births (ES = -0.05).

Figure 3. Temporal shift in the relationship between women's employment and fertility. Predicted effect sizes by calendar period, 95% CI



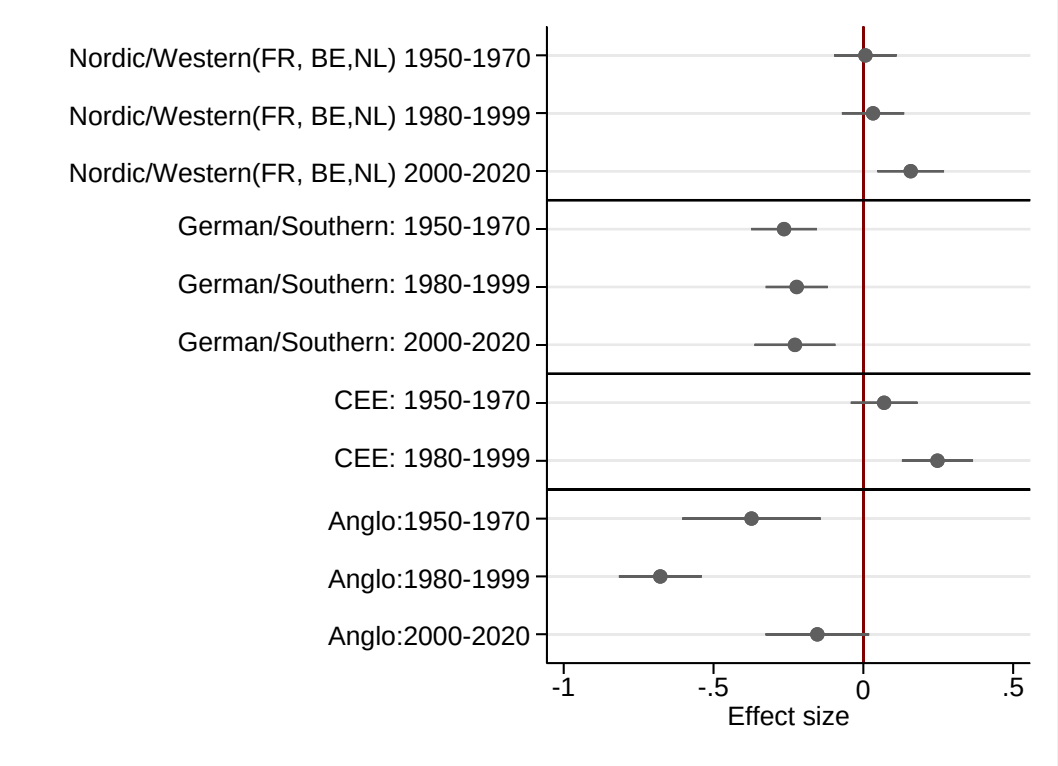
Note: The findings are based on a random-effect meta-regression based on 94 studies (572 observations) with effect sizes clustered within a study and country group as an explanatory covariate. The meta-regression by parity is estimated on 88 studies (551 observations), after we dropped studies which were based on all parities. The explanatory covariate in this model is country group interacted with parity. The control covariates include: the definition of employment (general, temporary vs permanent, full-time versus part-time) and non-employment (general, unemployment, inactive), a dummy indicating whether the sample was selected toward older women, a dummy indicating whether the sample was selected toward women in unions (cohabitation and marriage), a

set of dummies indicating whether the study control for respondents' social background, partners' characteristics, division of unpaid work in the household and migration status.

Finally, we examined whether the temporal shift in the relationship between women's employment and fertility occurred consistently across all analyzed country groups. Given the smaller number of studies covering the 2000s and 2010s compared to earlier periods, we had to consolidate country clusters. Specifically, we merged Western (Germany) and Southern Europe, which exhibited a similarly strong negative relationship, and Nordic with Western European countries (France, Belgium, and the Netherlands), where the relationship was, on average, nonsignificant (see Figure 2). Notably, no studies from Central and Eastern European (CEE) countries extended considerably into the 2000s and 2010s, limiting our analysis of temporal changes in that region to the late 1990s. Our findings, displayed in Figure 4, reveal that the shift in the relationship between women's employment and fertility occurred in all analyzed country clusters except for the German/Southern European group. More specifically, in the Nordic/Western cluster, the relationship turned positive after being previously insignificant, while in the Anglosphere, it weakened substantially. In contrast, in the

German/Southern European cluster, the negative association persisted, showing no significant change over time.

Figure 4. Temporal change in the relationship between women's employment and fertility across country groups, predicted effect sizes with 95% CI



Note: The findings are based on a random effect meta-regression based on 94 studies (572 observations) with effect sizes clustered within a study. The main explanatory variable is the country group interacted with average calendar time covered by the study. The control covariates include: the definition of employment (general, temporary vs permanent, full-time versus part-time) and non-employment (general, unemployment, inactive), a dummy indicating whether the sample was selected toward older women, a dummy indicating whether the sample was selected toward women in unions (cohabitation and marriage), a set of dummies indicating whether the study control for respondents'

social background, partners' characteristics, division of unpaid work in the household and migration status.

Robustness check

Our findings demonstrate robustness, as evidenced by a sensitivity analysis in which we iteratively re-estimated the model after randomly removing 10% of the observations (see Figures B1-B6). For each iteration, we computed the median predicted effect sizes along with their confidence intervals, defined as the range between the 2.5th and 97.5th percentiles. The median effect sizes align closely with those from the full dataset, with consistent confidence intervals, with two exceptions. First, the sensitivity analysis suggests that women's employment in the 21st century still negatively impacts second and higher-order births (but not the first), though less strongly than in the past. Second, it suggests the studied relationship in the Anglosphere in 2000s/2010s to be still negative, though close to zero.

Discussion

Our meta-analysis provides compelling evidence of a profound transformation in the relationship between women's employment and fertility in high-income countries. While previous decades were characterized by a strong negative association, our findings reveal a fundamental shift: in the 2010s, the link between employment and childbearing had largely dissipated. This shift is evident not only among childless women deciding whether to enter motherhood but also among mothers progressing to a second or a third child. It reflects deep structural changes in labor markets, family policies, and gender norms that have reshaped the conditions under which women balance paid work and motherhood.

This temporal shift in the relationship between women's employment and fertility was evident across all country groups in our meta-study—except for the German/Southern European cluster. In Nordic and Western European countries (excluding Germany), where state policies swiftly adapted to rising female labor force participation by enhancing work-family reconciliation measures, women's employment did not hinder childbearing already in the second half of the 20th century. Strong institutional support for working mothers—such as extensive childcare provision (as seen in the Nordic countries, France, and Belgium), policies facilitating part-time employment (as in the Netherlands), and increased paternal involvement in childcare (particularly in the Nordic region)—have likely played a crucial role in this transformation (Rindfuss et al. 2010; Klüsener et al 2013;

Mills 2015; Duvander et al. 2019). By the 21st century, the relationship between women's employment and fertility in these countries had turned significantly positive, suggesting that, as with men, stable employment has become a key precondition for childbearing.

A similar pattern emerges in Central and Eastern European (CEE) countries. While state support for work-family reconciliation remains weaker and men's participation in unpaid labor is more limited than in the Nordic countries, the economic context positions women as essential second earners. The socialist era strongly promoted female employment, and after the collapse of state socialism, economic necessity further reinforced the importance of women's income for household stability. As a result, employment has become a prerequisite for childbearing in this region (Braunet al 1994; Matysiak 2009).

The relationship between women's employment and fertility has also undergone a profound transformation in the Anglosphere. While strongly negative in the 1980s and 1990s, it has since weakened considerably, becoming statistically insignificant in our main analyses and only slightly negative in sensitivity tests. In this context, state intervention has traditionally been minimal, focused primarily on maintaining market efficiency rather than directly supporting work-family reconciliation. Over time, however, the combination of high labor market flexibility, and primarily expansion of flexible work schedules (part-time work, telework, flexible working hours), have improved the conditions for working mothers to combine paid work and care, facilitating childbearing among working women (Chung & Van der Horst 2018; Osiewalska & Matysiak 2025).

The only country group where no significant change was observed is the German/Southern European cluster, where the relationship between women's employment and fertility remains persistently negative. Both Southern Europe and German-speaking countries have historically offered limited institutional support for working mothers, including restricted access to full-time public childcare and paid parental leave, while also failing, for a long time, to promote paternal involvement in childcare (Anxo et al. 2011; Blome 2016; Schober 2020). This persistent structural constraint likely explains why the negative relationship between employment and fertility remains stronger in these regions than elsewhere in Europe. Only Germany undertook substantial steps to improve the conditions for work and family reconciliation. Nonetheless, the family policy reform aimed at childcare expansion and providing incentives for men to participate in childcare took place only in 2007 and its effects may not yet be evident in our findings.

By incorporating more recent studies, our meta-analysis extends the work of Matysiak and Vignoli (2008) based on studies published in 2006 and before. It highlights the continuing erosion of the Beckerian model of household specialization. Our findings confirm that the economic logic of

childbearing has shifted across most high-income countries, where expanding work-family reconciliation policies have made female employment increasingly integral to family formation. However, this transformation has not been uniform. While in Nordic and parts of Western Europe the relationship between women's employment and fertility has turned positive, in Germany and Southern Europe it remained strongly negative. There, work-family reconciliation policies remain inadequate, and women continue to face stark trade-offs between career and motherhood.

Overall, this study challenges longstanding assumptions about work-family trade-offs and suggests a reconfiguration of the economic and social conditions underpinning fertility decisions in contemporary high-income societies. This paper calls for a reconceptualization of the employment-fertility relationship and development of a new theoretical framework that better captures these evolving dynamics in contemporary high-income societies.

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Appendix B

Figure B1. Sensitivity Analysis: Predicted Effect Sizes by Country Group after Dropping 10% of Observations (Median & 95% CI from 1,000 Model Runs)

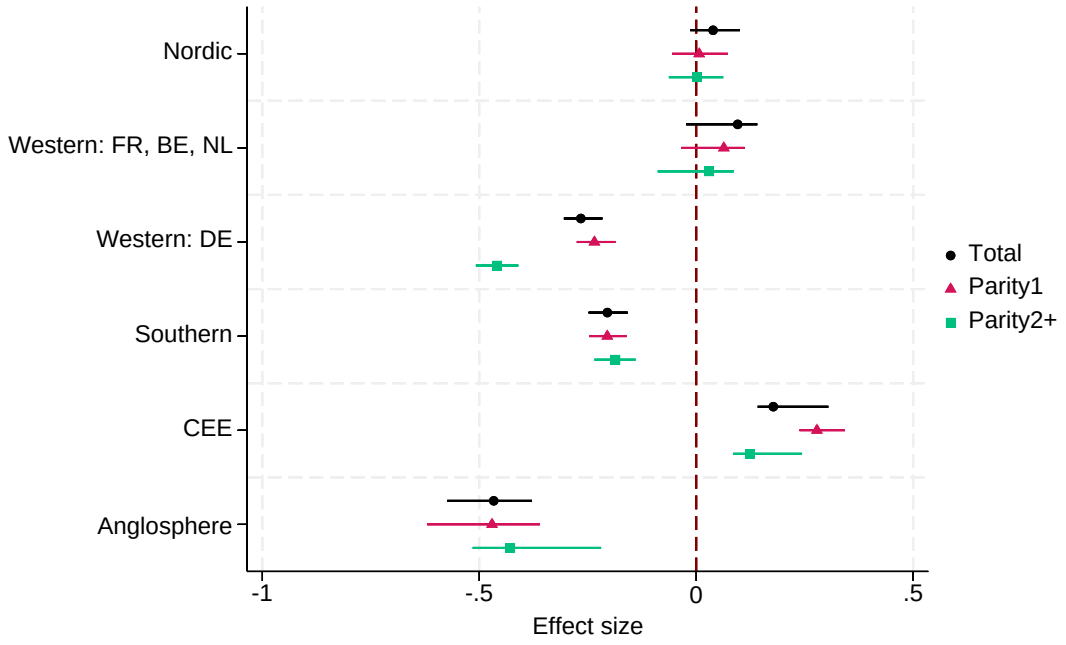

Figure B2. Sensitivity Analysis: Predicted Effect Sizes by Calendar Period After Dropping 10% of Observations (Median & 95% CI from 1,000 Model Runs)

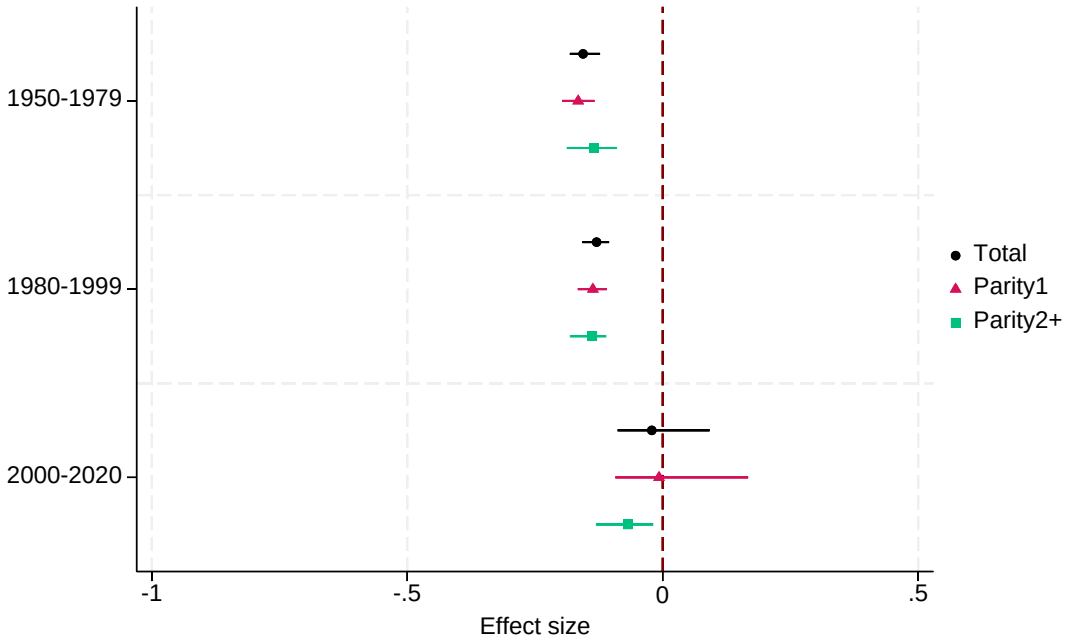

Figure B3. Sensitivity Analysis: Predicted Effect Sizes by Calendar Period and Country Group After Dropping 10% of Observations (Median & 95% CI from 1,000 Model Runs)

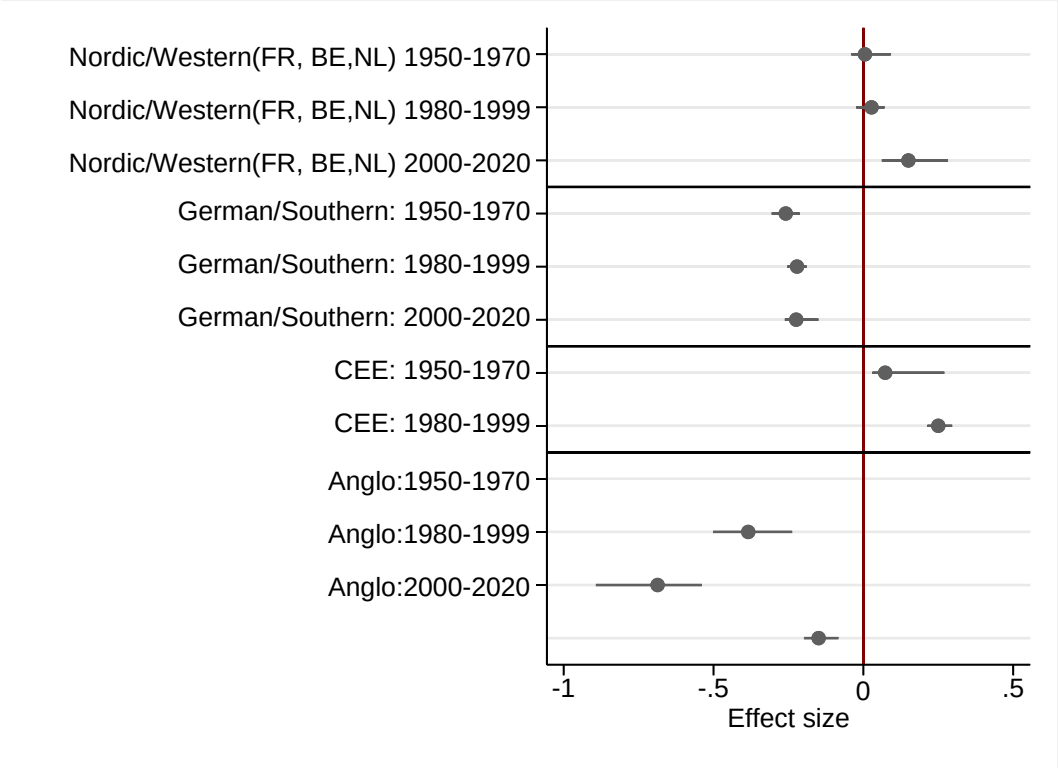

Figure B4. Sensitivity Analysis: Predicted Effect Sizes by Country Group after Dropping One Study (Median & 95% CI)

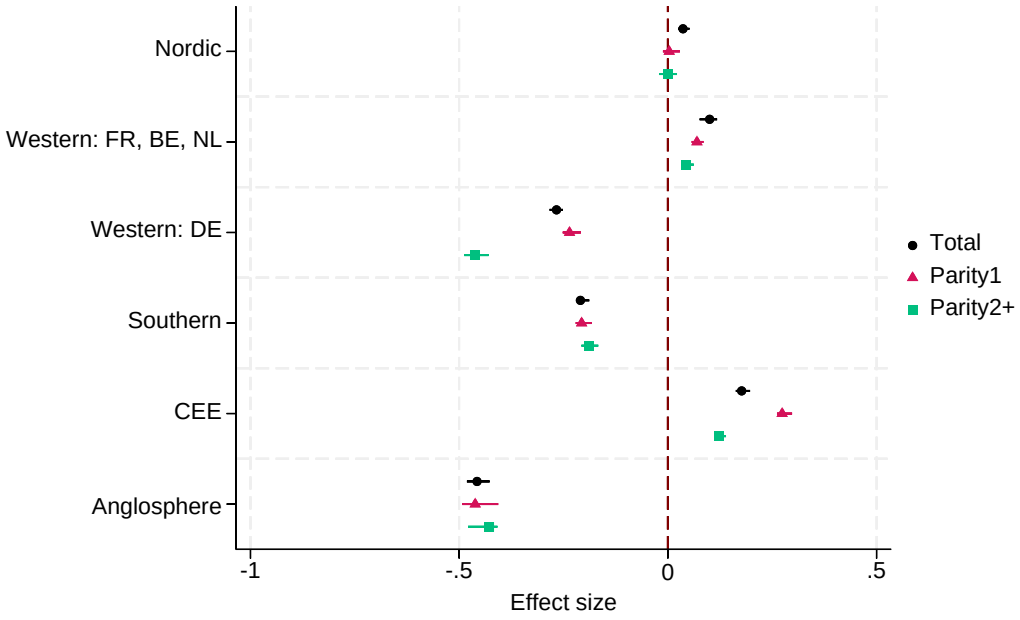

Figure B5. Sensitivity Analysis: Predicted Effect Sizes by Calendar Time after Dropping One Study (Median & 95% CI)

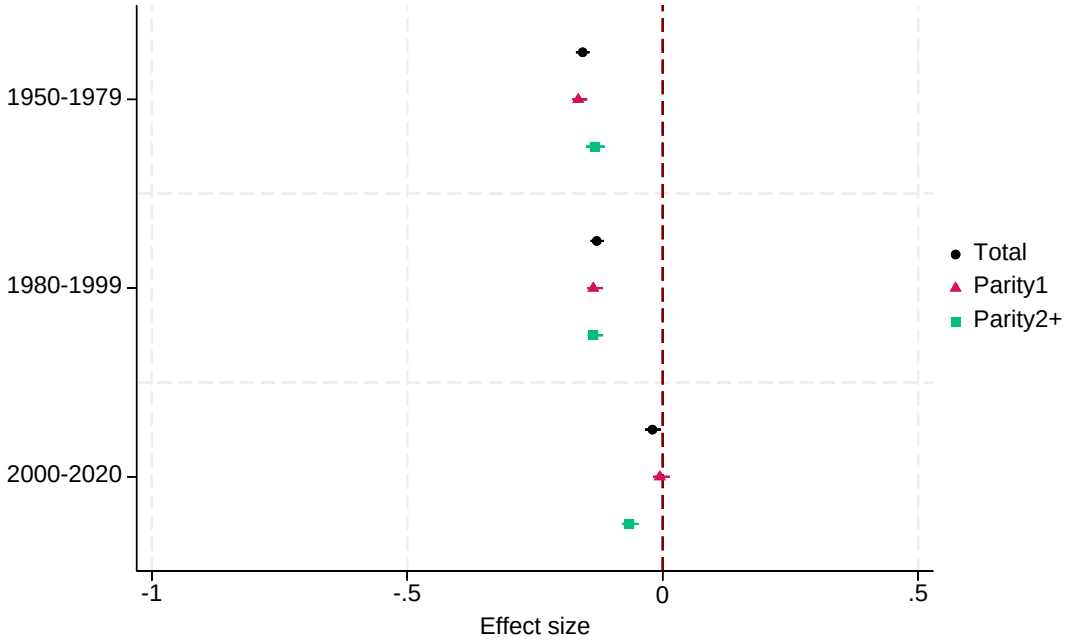

Figure B6. Sensitivity Analysis: Predicted Effect Sizes by Calendar Time and Country Group after Dropping One Study (Median & 95% CI)

Table B1. Full meta-regression model results

Calendar period	
1950-1979	Ref.
1980-1999	0.03***
	(0.01)
2000-2023	0.14***
	(0.02)
Country group	
Nordic	Ref
Western (FR, BE, NL)	0.06
	(0.04)
Western (DE)	-0.30***
	(0.04)
Southern	-0.25***
	(0.04)
CEE	0.14***
	(0.04)
Anglosphere	-0.49***
	(0.05)
Effect type	
employed versus not employed	ref
full-time versus not employed	-0.21**
	(0.09)
part-time versus not employed	-0.21**
	(0.09)
employed versus unemployed	0.04
	(0.07)

employed versus housewife	0.08
	(0.07)
fulltime versus unemployed	-0.25
	(0.14)
part-time versus unemployed	0.24
	(0.57)
fulltime versus inactive	-0.27
	(0.14)
part-time versus inactive	-0.36
	(0.19)
permanent versus not employed	0.14
	(0.22)
temporary versus not employed	-0.14
	(0.20)
permanent versus unemployed	-0.50**
	(0.22)
temporary versus unemployed	-0.15
	(0.20)
permanent versus unemployed	0.32
	(0.17)
permanent full-time versus inactive	0.37**
	(0.17)
permanent full-time versus not employed	-0.32
	(0.48)
Parity	
One	0.16***
	(0.01)
Two	0.16***

	(0.01)
Sample selection dummies	
Selection to ages >30	0.44***
	(0.02)
Selection to couples	-0.17***
	(0.04)
Control dummies	
Control for partnership status	-0.20***
	(0.005)
Control for social background	0.02
	(0.04)
Control for partner characteristics	0.19***
	(0.005)
Control for partners' division of unpaid labour	0.33**
	(0.15)
Control for migrant status	0.15
	(0.11)
Effect size variance	0.014
	(0.07)

* <0.05 ** < 0.01 *** <0.001