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• **Care earnings in the United-States and**
• **European Union: The Role of Social**
• **Policy and Labour Market Institutions**

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Care Earnings in the United States and European Union: The Role of Social Policy and Labour Market Institutions

Abstract: Care occupations are strongly gendered and remain relatively poorly paid, particularly in the United States. Prior research points to individual, relational, and market-valuation factors in explaining the relative earnings of care workers. In contrast, this study applies a comparative institutional perspective to investigate cross-national differences in the relative earnings of care workers. Using merged data from the U.S. Current Population Survey and EU-SILC, we find that national variance in labour market and welfare state institutions explains nearly all of the difference in the relative earnings of reproductive care workers between the U.S. and EU. Higher rates of collective bargaining coverage and welfare state spending contribute to higher relative earnings for reproductive care occupations, and lower relative earnings for high-status nurturant care occupations. Differences in the relative earnings of care workers appear to be primarily a construct of social and labour market policies.

SER Keywords: Collective bargaining, Europe, Institutionalism, Labour markets, USA, Welfare State

JEL Classification: I38, J21, J31

INTRODUCTION

Care occupations are among the most heavily-gendered jobs in advanced economies. In the United States and Western Europe, for example, women made up around two-thirds of workers in care occupations in 2016.¹ Moreover, demand for care work is rising. Though scholars of post-industrial labour market change tend to problematize the decline of industrial occupations, the employment shares of care occupations have generally grown at a faster rate than the decline of operators and manufacturers (EU-SILC 2016; U.S. Current Population Survey 2019). Despite their employment growth, the average worker in a reproductive care occupation remains relatively poorly paid. This is especially true in the U.S., the country that has received the bulk of empirical focus in investigations of the “care penalty” (Budig et al. 2019; England 1992, England et al. 1994; 2002; Hirsch and Manzella 2015; Pietrykowski 2017). While past explanations of the relative earnings of care workers tend to point mostly to individual and relational factors on one hand, or market valuation factors on the other, this study adopts a comparative perspective that investigates the role of institutional context in shaping differences in the relative earnings of care workers across countries. Specifically, this study seeks to understand why the care penalty for reproductive workers is larger in the U.S. relative to most countries within the European Union, and whether past explanations of the care penalty are sufficient to explain these cross-national differences.

Past literature primarily points to individual or relational factors on one hand, or market valuation factors on the other, in affecting the relative earnings of care occupations. The individual and relational perspective takes into account the individual characteristics of care workers (e.g. levels of education, demographic characteristics such as gender, race, ethnicity, citizenship status) or their relationship with care takers. The market valuation perspective relates to the mix of economic forces and social valuation of care work in shaping the earnings of care workers. Specifically, this perspective considers challenges related to the measurement of care-work productivity and the lack of monetary compensation for informal care work.

In contrast to these two groups of explanations, we employ an institutional perspective grounded in varieties of welfare states (Esping-Andersen 1990; 1999; for a review see Ferragina and Seeleib-Kaiser 2011). More specifically, we propose that labour market and welfare state institutions can more adequately explain cross-national differences in the relative earnings of care workers.² We test this hypothesis in a comparative framework, analysing the sources of differences in care earnings between the U.S. and countries within the European Union. We posit that for an explanation of the relative earnings of care workers to be robust, it should be able to explain differences *among* countries and not just *within* a given country. For example, if education or immigration status are the strongest drivers of care earnings, then accounting for such factors in a cross-national framework should largely explain why countries like the U.S. have higher penalties for reproductive care workers.

Prior studies exploring cross-national variation in care penalties include Budig and Misra (2010) and Lightman (2017). These studies present cross-sectional correlations to demonstrate that income inequality, union density, the size of the public sector and specific country-characteristics are associated with significant cross-country differences in the care wage-penalty or premium. We build off their work, but use higher-quality data and methods to empirically evaluate the role of welfare state and labour market institutions in shaping variation

in the care penalty. Specifically, we use harmonized micro-data from the U.S. and EU Member States from 2005 to 2016 and country and year fixed effects models to test the extent to which the relative earnings of care occupations are conditional on demographic and time-varying contextual factors, such as collective bargaining coverage, employment protection legislation, and welfare state spending. Following recent developments in the care literature, we also take into account the heterogeneity of care work, considering earnings penalties or premiums among *reproductive* care occupations, as well as high- and low-status *nurturant* care occupations.

Our primary findings suggest that labour market and welfare state institutions are far more important than individual/relational characteristics or patterns of market valuation in explaining the relative earnings of care occupations. Specifically, we find that higher rates of collective bargaining coverage and welfare state spending contribute to higher relative earnings for reproductive care occupations and lower relative earnings for the well-paid, high-status nurturant care occupations. A counterfactual analysis comparing care penalties in the U.S. to EU Member States demonstrates that demographic factors explain a very small portion of cross-national differences in the relative earnings of care occupations. Instead, labour market and welfare state institutions explain nearly all of the difference in the relative earnings of care workers between the U.S. and EU. We conclude that the relative earnings of care workers is primarily a construct of institutional context, and that institutional variance carries importance particularly for the economic wellbeing of women in the labour force.

The remainder of the paper proceeds as follows. We first conceptualise care work and place our contribution within the care penalty literature. Then we describe our data and estimation strategy, and present our findings in three steps – a descriptive picture, the result of our regression analysis and the counterfactual scenarios comparing the U.S. and EU Member states.

CONCEPTS AND CONTEXT

Though care occupations are often considered to be confined to a small subset of occupations, such as childcare workers, recent literature has expanded upon this narrow definition to provide a broader conceptualization of care work. This section illustrates the notions of nurturance and reproductive care and their translation into measurable concepts. Afterwards, we elaborate our hypotheses in relation to previous literature.

Conceptualizing Care Work

Prior literature tends to segment care occupations into *nurturant* care work and *reproductive* care work. The two concepts are grounded in distinct literatures (Duffy [2005: 68-71] for a review; Duffy 2007; 2011; Duffy et al. 2013). Nurturance is distinguished from other paid and unpaid activities due to the fact that it is firmly grounded in human relationality.³ The centrality of relationality contributes to jobs where ‘feelings’, ‘responsibility’, ‘responsive action’ and ‘relationship/dependence’ between the care-taker and the care-receiver are key and unique (Duffy 2005: 69). The existence of a care penalty for *nurturant* care occupations has been measured in the United States during the 1980s and 1990s (England 1992; Steinberg et al. 1986; Steinberg 1990). Kilbourne et al. (1994) compare wage differentials between men

and women in occupations requiring nurturant social skills and, conversely, those based on cognitive, physical and authoritative skills. The study found significant wage penalties in the former for both male and female workers. England et al. (2002) also found that young workers involved in caring labour – defined as “work that provides face-to-face service and develops the capabilities of recipients”– experienced in the United States a wage penalty of 5-6% (England et al. 2002: 455). Subsequent studies distinguished between *low*- and *high*-status nurturant care occupations (Barron and West 2013; Budig et al. 2019; Lightman 2017). In particular, Lightman (2017) and Barron and West (2013) apply a conceptualization of nurturant care work that distinguishes professionals (high status) from service (low status) nurturant workers. This distinction echoes also the role of network closure in determining wage-penalties and premiums (Weeden 2002), as those employed in high status nurturant care activities more often rely on this closure to defend their wages (Lightman 2018; Budig et al. 2019).

The notion of *reproductive* care emerged instead in the feminist and Marxist debate about domestic labour and unpaid social reproduction. Secombe (1974: 9) illustrated how unpaid domestic labour “acts directly upon wage-purchased goods and necessarily alters their form”, and that the work housewives performed for free is “part of the congealed mass of past labour embodied in labour power”. Differently from the nurturance framework, Marxist feminists did not focus on the relational dimension as a distinctive feature of care work, but rather on how this unpaid and unrecognised work contributes to the reproduction of the workforce in a capitalist economy (Dalla Costa 1972; Hartmann 1976). The notion of reproductive care was successively transposed also from the world of unpaid to that of paid care (see Laslett and Brenner 1989). While initially the notion of reproductive labour was applied to make visible the exploitation that capitalism exerts on subjects excluded from the formal economy within a Marxist framework, over time it progressively gained traction in the mainstream feminist debate. At the empirical level, Nakano Glenn (1992: 115) employed the concept of reproductive care to highlight the historical racial division of reproductive labour in the US, defined as “the array of activities and relationships involved in maintaining people both on a daily basis and intergenerationally”. Subsequent empirical work measured the wage penalty of reproductive care occupations, including workers in food preparation, home-care services and cleaning (Budig et al. 2019).

Despite their different origins, nurturant and reproductive care activities have in common the offer of services related to social reproduction.⁴ Following prior research on care occupations, this study similarly segments care occupations into three categories: reproductive, low nurturant, and high nurturant care occupations. Table 1 presents our occupation classifications, again following this prior literature, as well as their respective ISCO codes.

Table 1: Classification of care occupations

Occupation	Sub-Occupations	ISCO-88 Codes
<i>High Nurturant Care</i>	Life science and health professionals (doctors, dentists, nursing professionals); Teaching professionals	22, 23
<i>Low Nurturant Care</i>	Life science and health associate professionals (medical assistances, nursing associate positions, and similar); Teaching associate professionals	32, 33
<i>Reproductive Care</i>	Personal and protective service workers (housekeepers, restaurant workers, child-care, home-based care, and similar); Sales and services elementary occupations (domestic helpers and cleaners, building caretakers, and similar)	51, 91

Reproductive care occupations include personal and protective service workers, plus sales and services occupations. High nurturant occupations include life science and health professionals, as well as teaching professionals. Finally, low nurturant occupations include lower-level versions of the high nurturant jobs.

Explaining the Care Penalty

The explanations of the relative wages of care occupations in prior studies are grounded in general economic and sociological frameworks (Budig et al. 2019; England 1992; England et al. 2002; for a review, England 2005) and can be summarised in three competing perspectives: the individual and relational perspective, the market valuation perspective, and the institutional perspective. We describe each in turn.

Individual & Relational Perspective

The individual and relational perspective of the relative earnings of care occupations tend to focus on the personal characteristic of care workers or the relationships of care workers to the individuals for whom they care. One argument, for example, is that workers in care jobs, and reproductive care work especially, are more likely to be workers with lower levels of education. Reproductive care work tends to have lower barriers to entry in terms of trained qualifications relative to nurturant care occupations or other middle- to high-pay professions. Budig et al. (2019) suggest that demographic differences of reproductive care workers relative to the general population help to explain care penalties in the U.S. Devaluation based on race, ethnicity, or citizenship status may similarly drive down earnings. Prior studies analysing the racial divide of care work, for example, have shown that white women are more likely to be engaged in nurturant care activities, while ethnic minorities are more likely to take up the ‘dirty work’ in lower status reproductive care occupations (Duffy 2007).

The *prisoner of love* argument⁵, in contrast, argues that care workers fulfil their duties even when wages are low because the workers are attached to care-recipients and draw

satisfaction from their relational act of caring (Folbre 2001). Care workers are seen as hostages of love (England 2005: 390) and the employer exploits their altruism through lower wages (England et al. 2002; England 2005; Folbre 2001).

Self-selection mechanisms have similarly been applied to explain the devaluation of care work (England et al. 2002). As women have historically provided care for free in the domestic sphere, society has fostered the expectation that care is primarily an act of love, which entails a moral obligation toward care-recipients within the household. Care work is associated with mothering; hence, it attracts only workers who are predisposed to this activity and are ready to accept wages below the market value (England et al. 2002). This perspective has been applied to explain lower wages for nurturant care activities, but does not seem to operate in the case of reproductive care workers (Budig et al. 2019: 296).

Moreover, a tendency for societies to perceive care occupations as primarily composed of female workers (whether true or not) may contribute to a societal devaluation of care work, further depressing relative wages in the sector. This devaluation framework suggests that wages of men and women employed in occupations socially constructed as quintessentially feminine – such as caring labour – are devalued in the market (Cancian and Oliker 2000; England et al. 2002).⁶

If these individual level factors were to explain differences in the care penalty between the U.S. and EU Member States, then considering the demographic characteristics of workers (such as age, sex, education, immigration status, and so on) in care occupations should largely account for cross-national variation in the relative earnings of care workers. In our empirical models, we also account for the average share of care occupations worked by women, testing whether greater concentration of women in care work contributes to a devaluing of earnings.

Market Valuation Perspective

The market valuation perspective instead focuses on the economic valuation of care work. As Folbre (2006: 15) suggested: “the impersonal dynamic of supply and demand are better designed for the invisible hand than the invisible hearth” for several interconnected reasons. First, the quality of care cannot be adequately priced because care-receivers are not normal customers – third parties often pay for the service – and their satisfaction is hard to measure (Folbre 2006: 18). Second, care sector productivity grows more slowly than productivity in manufacturing. England et al. (2002) pointed out that the Baumol (1967) disease plagues the care sector more than other kinds of services-sector occupations. While for example workers in the banking sector saw their per-capita productivity rapidly increase due in part to technological development (Bernhardt et al. 2001), care workers – employed in activities more labour than capital intensive – remain stuck in a low-productivity path. The large majority of care occupations, and in particular reproductive care activities, are at the margins of the service-based economy.

This economic lens on the productivity of care work is, of course, incomplete. Care work not only benefits the patients, children, and students who directly receive care, but also indirectly produces positive externalities for other subjects, such as family members of the care receivers. The market is unable to price the future gains society and individuals obtain from the provision of care work (for a discussion see England 2005: 386-387).

Still, it seems unlikely that differences in the productivity of care workers can explain cross-national differences in relative care earnings. Differences in demand for care work,

perhaps due to a larger share of dependents in the population, might influence cross-national differences in care earnings. To account for this possibility, we measure the effect of the overall employment share of care occupations – the outcome of supply and demand factors influencing the employment share of care work – on the relative earnings for care workers.

Institutional Perspective

An institutional perspective argues that the relative earnings of care workers are largely shaped by welfare state policies and labour market institutions. Specifically, we posit that collective bargaining coverage, employment protection legislation (EPL), welfare state spending, and residual income inequality will be more important than the prior two perspectives in explaining variation in the relative earnings of care workers.

Welfare state and labour market institutions have been at the forefront of analyses of poverty, income inequality, and the market wage distribution (e.g. Korpi and Palme 1998; Pontusson 2005). Countries with greater collective bargaining coverage tend to have more compressed wage distributions (e.g. Freeman and Medoff 1984; Card et al. 2004). For care workers in particular, collective bargaining and/or union protections often offer stronger employment standards and standardized wage schedules. As such, we expect higher collective bargaining coverage to be associated with smaller wage penalties for reproductive care occupations, and smaller premiums for the high nurturant care occupations. Wages in many service sector jobs are more protected in highly regulated labour markets, such as those with greater EPL (Estevez-Abe et al. 2001). As such, we expect similar patterns to emerge when evaluating the role of EPL: lower penalties for reproductive care workers, and lower premiums for high nurturant care workers.

With respect to welfare state spending, countries that invest more into generous income support for families provide parents with greater choice in whether to enter the labour market or to perform care work at home. For workers with lower market earnings potential, greater financial ability to perform care work at home reduces the supply of potential care workers in the formal labour market and increases the reservation wage for such an individual to enter the formal labour market. As such, we expect greater investment into income supports to be associated with a smaller wage penalty for reproductive care workers. We do not expect a significant influence of spending for cash transfers on the wages of nurturing care workers, as these occupations tend to pay more than reproductive care occupations.

Meanwhile, countries that invest more into public services tend to contribute to the direct creation of decently-paid care work in the public sector. Thus, higher spending on social services might reduce the relative wage penalty for reproductive and low nurturant care workers. Conversely, greater investment in social services might increase the number of workers in the care sector, contributing to more competition and lower relative earnings.

Finally, we expect earnings inequality to play an important role in explaining cross-national differences in the care wage-penalty. Milkman et al. (1998) discussed the relation between income inequality and domestic work, arguing that if the disparity between rich and poor households are very high, it is much easier for rich households to employ less fortunate persons as domestic servants. Budig and Misra (2010) and Lightman and Kevins (2019) have extended this finding to care wage penalties in a cross-national context. From an almost tautological perspective, we should observe greater earnings inequality to be associated with

greater care penalties for reproductive care workers and premiums for high nurturant care workers. If so, this would again suggest that individual level and economic perspectives of care penalties are incomplete: the broader distribution of economic resources, largely a product of institutional context, may drive much of the variation across countries in the care penalty.

The U.S.-focused literature on the care penalty has only briefly pointed to the importance of the institutional context (see Folbre 2008). Focusing solely on the U.S. (or any single country) naturally limits the ability of researchers to take advantage of institutional diversity. Several comparative studies, however, have suggested that differences in welfare and labour market institutions may explain differences in the relative earnings of care workers. Budig and Misra (2010: 458) suggested that government support for the public sector, levels of union membership, and levels of income inequality help to explain part of the cross-national variation in care penalties (see also Lightman and Kevins 2019). In subsequent studies, Lightman (2017, 2018, 2019) has pointed to the importance of welfare regime orientations. The author finds that migrants and non-migrant workers in low-status nurturant care occupations seem to experience a wage penalty in liberal and conservative welfare regimes, but not in social democratic regimes (Lightman 2018: 10).

This study differs from this past work in important ways. First, we move beyond cross-country correlations and simplified regime indicators to assess the role of political-institutional context in shaping the relative earnings of care occupations. In doing so, we combine annual, worker-level data from the U.S. and EU to assess how change in political-institutional context within countries over time affects the care penalty. Second, this study focuses more specifically on adjudicating the three competing theories of the relative earnings of care occupations. Can the individual/relational, market valuation, or political-institutional perspective best explain differences in the relative earnings of care occupations? Which of these perspectives helps to explain why penalties for reproductive care workers in the U.S. appears to be much greater than in other high-income countries? We now present a framework for answering these questions.

DATA & METHODS

Data Source

Our primary data sources are the European Union Statistics on Income and Living Conditions (EU-SILC) and the U.S. Current Population Survey (CPS). EU-SILC provides income and occupation data for each of the countries within the European Union. We combine the EU-SILC sample with the harmonized CPS sample to include the U.S. The merge of these two surveys allows us to test the effect of several contextual indicators on cross-national variation in the relative earnings of care workers. Our sample encompasses 25 countries (Austria, Belgium, Czech Republic, Denmark, Estonia, France, Finland, Germany, Hungary, Ireland, Iceland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Spain, Sweden, Slovakia, United Kingdom and the United States) from each year between 2005 and 2016.

All indicators in the CPS used in this study match those in EU-SILC. The sample includes all employed adults between the ages of 18 and 60. We apply sample weights in our

analyses. When doing so, we normalize the sample weights so that each country-year’s weights sums to one. In other words, each country-year carries the same amount of aggregate weight as another country-year. This balancing of the weights ensures that our results are not driven simply by the fact that some countries have much larger populations than other countries.

We use two-digit ISCO codes to segment all employed adults into occupational categories. As previously discussed, the distinction between high status nurturant, low status nurturant and reproductive care activities captures the heterogeneity of care work. To contextualize the levels and growth of care employment, we also present descriptive findings for the “operators and manufacturers” occupation group, which is central to recent analyses of technological change and differs in gender balance relative to care jobs. We emphasize that we add these occupations to our descriptive analyses merely for the sake of comparison, as it is useful to have a benchmark to which to compare employment shares of care occupations. We choose operators and manufacturers as this benchmark as they have received ample attention in recent literature.

In Table 2, we summarise our indicators for the three perspectives on the relative earnings of care workers that we test within our models. Each of the indicators is either calculated directly from the micro-data (for example, feminization of care work) or is pulled in from the OECD databases on social conditions.

Table 2: Overview of indicators and data sources

Perspective on Care Earnings	Indicators	Data Source(s)
Individual & Relational	Education, age, sex, full-time/part-time status, citizenship status, public sector, whether living in the city center	Micro-data (SILC and CPS)
Market Valuation	Share of care workers who are female in country and year; employment share of care occupations in country and year	Micro-data
Political-Institutional	(1) Employment protection legislation, (2) bargaining coverage, (3) spending on services as share of GDP, (4) spending on transfers as share of GDP, (5) residual income inequality (Gini)	OECD: 1, 2,3,4 Microdata: 5

Estimation Strategy

Our estimation strategy is primarily concerned with measuring the relative penalty or earnings premium associated with care occupations across countries and time. In particular, we are interested in how contextual factors at the country level are associated with the relative earnings of care occupations (see Table 3 for the correlation among macro variables). We use country- and year-fixed models to explicitly measure the effects of within-country variation in spending (or other measures of institutions) on within-country variation in our outcomes (the care penalty). In doing so, we are able to remove all other between-country variance, greatly

reducing the threat of omitted variable bias. As such, our approach is better able to capture the “true” effects of spending on outcomes than, say, multi-level models or other random effects approaches.

Table 3: Correlation among macro-level variables

	Gini	Spending: Services	Spending: Transfers	EPL	Bargaining Coverage	Feminization of Care Work
Gini	1.00					
Spending: Services	-0.08	1.00				
Spending: Transfers	-0.62	0.01	1.00			
EPL	-0.74	-0.22	0.73	1.00		
Bargaining Coverage	-0.76	0.18	0.74	0.76	1.00	
Feminization of Care Work	-0.49	0.03	0.25	0.36	0.35	1.00
Size of Care Occupations	0.18	0.57	-0.17	-0.31	0.05	-0.16

Our baseline model to estimate the care premium or penalty is as follows:

$$y_{ict} = \beta_0 + \beta_1 \text{Care}_{ict} + \beta_2 X_{ict} + \delta_c + \gamma_t + \varepsilon_{ict} \quad (1)$$

The outcome variable is an individual’s logged annual earnings. The given set of care occupations – high nurturant, low nurturant, or reproductive (see Table 1) – is represented by a binary dummy variable. X_{ict} is a vector of individual controls, including education, age, sex, full-time/part-time status, citizenship status, whether working in the public sector, and whether living in the city center. Country and year fixed effects are included.

While our baseline model informs us of the average care penalty, we are primarily interested in how variance in contextual factors within countries over time affects the relative earnings of care workers. To estimate the moderating effects of our country-level contextual factors, we estimate the following, using a country’s level of spending on social services (“spending”) as an example:

$$y_{ict} = \beta_0 + \beta_1 \text{Care}_{ict} + \beta_2 \text{Spending}_{ct} + \beta_3 (\text{Care}_{ict} \times \text{Spending}_{ct}) + \beta_4 X_{ict} + \delta_c + \gamma_t + \varepsilon_{ict} \quad (2)$$

We standardize the contextual indicators so that β_2 , the base effect of the contextual factor on earnings, represents the estimated effect at the mean level of spending. Likewise, β_1 measures the average care penalty or premium when the given contextual factor is at its grand mean. The interaction of the care dummy and the contextual indicator (β_3) provides the moderating effect of the contextual variable on the relative earnings of different kinds of care occupations. Though the example of spending is provided above, we estimate Equation (2) individually for each of our contextual indicators (see Table 2).

Finally, we build on Equation (2) to estimate how variance in contextual factors affects the care premium or penalty in the United States relative to EU Member States. Specifically, we model the difference in the U.S. performance if the U.S. matched the mean level of contextual variables as found in the full sample of countries in the study. This is modeled as:

$$y_{ict} = \beta_0 + \beta_1 \text{Care}_{ict} + \beta_2 \text{Spending}_{ct} + \beta_3 \text{USA}_{ct} + \beta_4 (\text{Care}_{ict} \times \text{Spending}_{ct}) + \beta_5 (\text{Care}_{ict} \times \text{USA}_{ct}) + \beta_5 X_{ict} + \gamma_t + \varepsilon_{ict} \quad (3)$$

In this model, β_4 effectively absorbs the variance in earnings in care work due to variance in the given contextual factor. Due to this interaction term, the effect of other indicators can be interpreted as their effect at mean levels of the contextual factor (recall that the contextual indicator is standardized). For example, β_1 represents the relative earnings of a care occupation when, say, national-level spending is at its grand mean, as discussed in the prior equation. This interpretation becomes important when interpreting β_5 , the interaction between the care occupation and U.S. dummies. Now, β_5 represents the care penalty in the U.S. relative to other countries at the mean level of the contextual factor included in the interaction term of β_4 . This is our primary focus: how β_5 , or the relative care penalty in the U.S., changes when variance in our contextual indicators is accounted for. As one example, it may be the case that high levels of collective bargaining support the relative earnings of care occupations. Given that the U.S. has low levels of bargaining coverage, accounting for variance across country-years in bargaining coverage is likely to reduce the disadvantage of being a care worker in the U.S. relative to EU Member States. If so, β_5 would become less negative and would inform us that collective bargaining is an important driver of differences in the relative earnings of care occupations in the U.S. relative to EU Member States.

In the Appendix, we use a similar specification to also estimate how the variance in contextual factors affect the care premium or penalty in EU countries relative to the United States. We cluster EU countries in the following way: ‘Eastern Europe and Baltics’ (Czech Republic, Estonia, Hungary, Lithuania, Latvia, Romania), ‘Nordic’ (Denmark, Finland, Sweden, Norway, Iceland), ‘Southern Europe’ (Italy, Portugal and Spain), ‘Continental Europe’ (Austria, Belgium, France, Germany, Luxembourg, Netherlands), and the UK and Ireland.

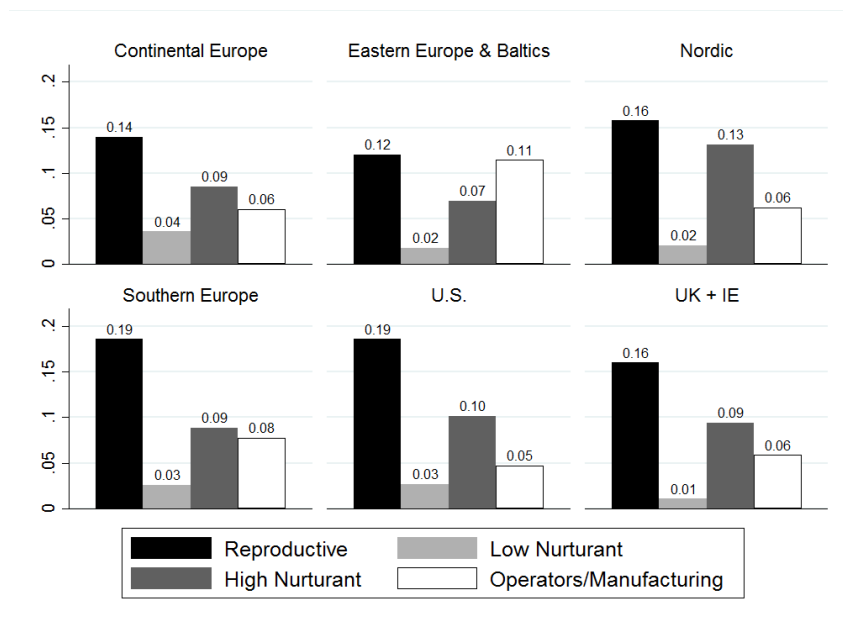
One limitation of our approach is that we only measure earnings of workers in formal care occupations. Many individuals in care jobs are informally employed. This is likely to be especially true among non-citizen care workers. Therefore, our models may be biased if some countries have much larger shares of care work occurring outside of the formal economy. Moreover, our models only capture within-country change in contextual variables, whereas most of the variation comes from between-country differences. Though this gives us less variance to work with, it nonetheless reduces the threat of omitted variable bias and provides greater precision in our estimates of contextual effects on care earnings.

FINDINGS

Descriptive Statistics

We first present descriptive statistics on the size of care sector and its growth over time, as well as the relative earnings of care occupations across the U.S. and EU Member States. Figure 1 displays total employment shares by occupation type in 2016. For brevity, we group EU Member States into their respective regions in this figure. We show the employment shares of the three sets of care occupations and, for comparison's sake, the operators and manufacturers occupation grouping that has received much interest in recent labour market studies. We find that reproductive care occupations are more numerous than low and high nurturant care occupations and operators/manufacturers in every region. Only in Eastern Europe and Baltics are the employment shares of operators/manufacturers close to those of reproductive care workers. These descriptive patterns emphasize the importance of understanding the earnings of care occupations.

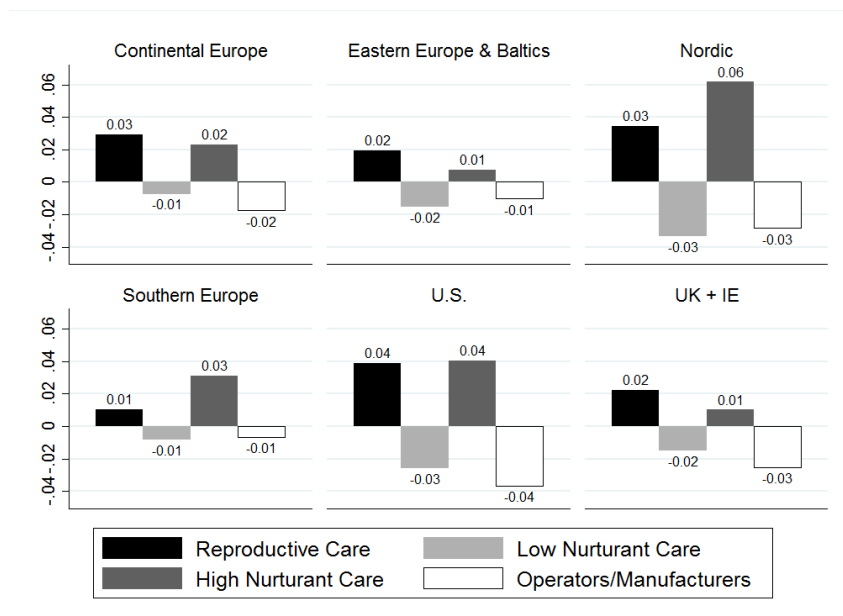
Figure 1: Total employment shares by occupation type and region, 2016



Note: East Europe and Baltic countries includes CZ, EE, HU, LT, SK, PL, LV, RO. Nordic includes DK, FI, SE, NO, IS. South Europe includes IT, ES, PT. Continental Europe includes AT, BE, DE, FR, LU, NL.

Figure 2 shows the mean change in employment shares of the four occupational categories for the period 2005-2016. Reproductive care occupations and high nurturant care occupations are rapidly growing in employment shares across each of the regions depicted, while low nurturant care and operators/manufacturers are declining. Notably, the growth of reproductive care occupations roughly mirrors the decline of operators/manufacturers in each of the regions examined.

Figure 2: Mean change in employment shares by region (2005-2016)



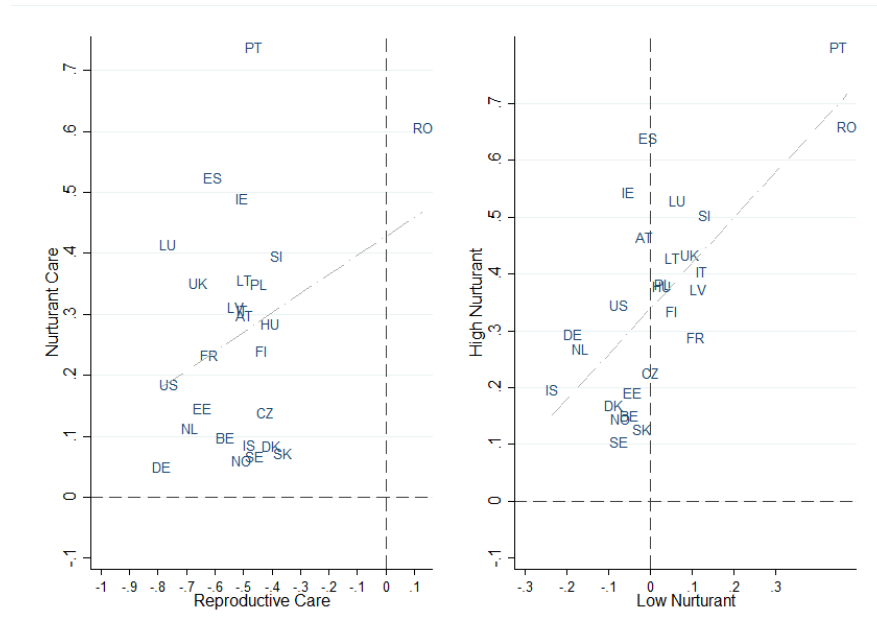
Note: East Europe and Baltic Countries includes CZ, EE, HU, LT, SK, PL, LV, RO. Nordic includes DK, FI, SE, NO, IS. South Europe includes IT, ES, PT. Continental Europe includes AT, BE, DE, FR, LU, NL.

Figure 3 now looks at the relative earnings of care occupations across country. Each point in the figure represents the mean relative earnings of the given type of care occupation. When this is negative, this indicates that the average care occupation of its type earns less than other occupations in that country; when positive, it indicates that the occupation tends to earn more in that country. The points in this figure do not yet control for individual and country characteristics. The left half of Figure 3 displays earnings returns for reproductive care occupations (X-axis) and nurturant care occupations (Y-axis). In all countries except for Romania, reproductive care occupations earn less, on average, relative to other occupation types. The penalty for reproductive care activities is the worst in the U.S., Luxembourg, and Germany. Nurturant care occupations, by contrast, tend to earn more than other occupation types. This is particularly true in Portugal (a similar pattern can be also observed in Spain and Ireland), hence its position at the top of the figure. In the Nordics (e.g. Iceland, Denmark, Sweden and Norway), Belgium, Germany, the Netherlands, and Slovakia, nurturant care occupations experience a smaller relative earnings premium. In general, countries with larger earnings penalties for reproductive care workers also have smaller earnings premiums for nurturant care workers.

The right half of Figure 3 separates nurturant care occupations into their high and low status categories. As expected, low status nurturant care occupations tend to have below-average earnings (or slightly above average in certain countries, e.g. France, Finland, Latvia, Lithuania, United Kingdom, Luxembourg), while high status nurturant occupations experience an earnings premium in all countries examined. Portugal and Romania are again noticeable exceptions, displaying wage premiums for both high and low status nurturant care

occupations.⁷ In general, countries with smaller earning premiums for high status nurturant care workers also have higher penalties for low nurturant care workers.

Figure 3: Mean unconditional earnings returns by occupation type and country (2005-2016)

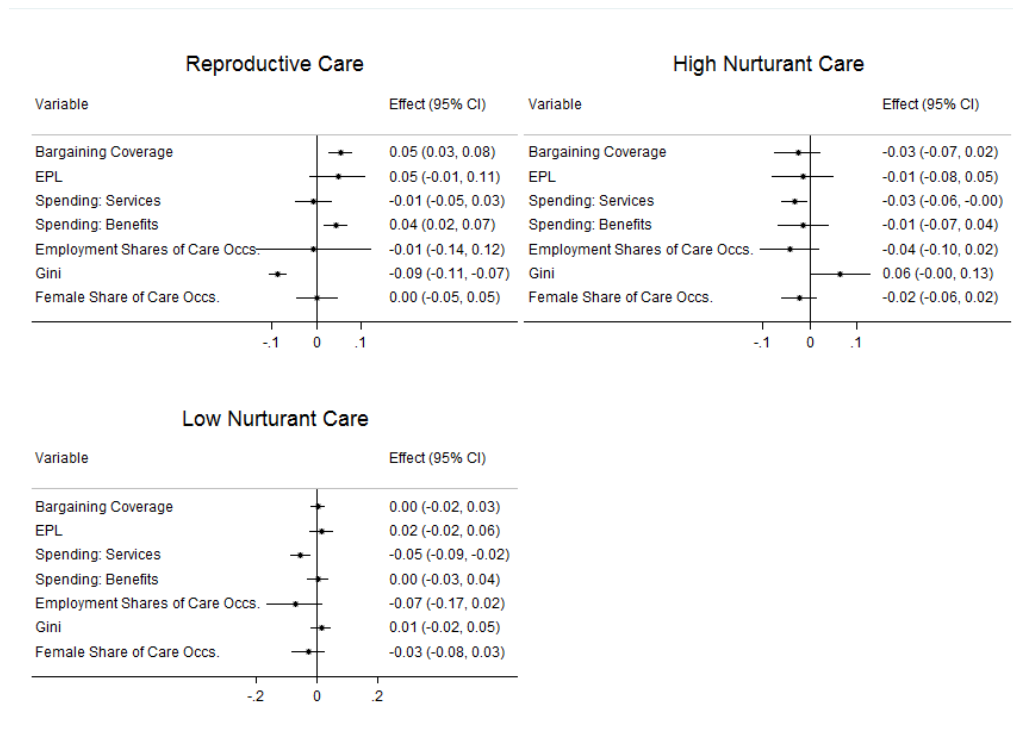


We can draw a first set of insights from this descriptive information. First, care work – and in particular reproductive care and high status nurturant care occupations – employ a considerable part of the labor force in European countries and the United States. Second, nurturing care is changing in nature. Across all regions analysed we witness growing employment shares of high status nurturing care activities and a corresponding decline of low status nurturing care occupations. This change is more pronounced in Nordic countries and the United States (Fig. 2). Third, although much discussion on labour market change and wage polarization focuses on automation and technological change, our findings seem to suggest that reproductive and high status nurturant care activities are growing at a faster rate than the decline of operator/manufacturing jobs in each of the regions examined (Fig. 2). Moreover, while reproductive care activities overall experience a wage penalty, high status nurturant care activities are characterised by relative wage premiums (Fig. 3). Hence, wage inequality within the care-sector might explain part of the growing wage polarization we observe across high-income countries (as Dwyer [2013] demonstrated for the United States).

Estimation Results

Our formal estimations move beyond our descriptive results to understand the role of individual/relational factors, market valuation, and political-institutional context in explaining cross-national variation in the relative earnings of care workers. Figure 4 visually depicts the moderating role of our contextual indicators from the country- and year-fixed effects models presented in Equation 2.

Figure 4: Moderators of earnings for care occupations (results from two-way fixed effects models)



The upper-left panel of Figure 4 displays the role of contextual effects on the relative earnings of reproductive care occupations. The findings demonstrate that higher bargaining coverage within a country and greater spending on cash transfers contribute to higher relative earnings for reproductive care occupations. Put differently, they reduce the care penalty for such occupations. These findings support our hypothesis that labor marker and welfare state institutions are particularly important in shaping the relative earnings of care workers. Higher EPL also appears to contribute to higher relative earnings, though the results are not significant at the 5 percent level. Higher earnings inequality (“Gini”), by contrast, is associated with a greater care penalty for reproductive care occupations. These findings are consistent with previous literature highlighting the relationship of earnings inequality and the wage penalty of reproductive care workers. Reproductive care workers – being mostly concentrated in the low service sector and characterised by low productivity levels (Baumol 1967; Bernhardt et al. 2001) – face greater earnings penalties in less regulated labour market contexts and where workers have not been able to establish or defend mechanisms for collective wage protection.

The upper-right panel of Figure 4 presents the results for high nurturant care occupations. In this case, greater spending on social services is associated with a lower earnings premium for high nurturant occupations, while higher income inequality is associated with a higher earnings premium for such occupations. The other indicators are not statistically significant. As expected, earnings inequality acts in an opposite way than previously described for reproductive care workers. High nurturant care workers benefit from a less compressed earnings distribution, but reproductive care workers clearly do not.⁸ Different from reproductive care occupations, investment in social services appear to decrease the earnings

premiums of high nurturant care occupations. This could be due to the fact that greater public investment into services increases the employment share of public-sector care workers, who face more compressed earnings distributions relative to private care workers.

The lower left panel of Figure 4 looks at the results for low nurturant care occupations. The results suggest that spending on services again reduces the relative earnings of low nurturant care occupations. The other indicators are not statistically significant.

In sum, we gather a second set of insights from our regression analyses. First, we find that labour market and social policy context both matter in explaining the cross-national variation of the relative earnings among care-workers. Where labour market protections are strong and collective bargaining agreements are inclusive, the earnings penalty for reproductive care workers is reduced. The effect of the social policy context is slightly more complex as cash transfers and services differently impact the three groups of care occupations. While higher spending for cash transfers are associated with a reduced wage penalty for reproductive care workers, higher state investment in social services moderate the premium for high-status nurturant care workers and increases the penalty for low-status nurturant care workers.

Second, the overall level of earnings inequality consistently carries the most weight in explaining cross-national differences in the relative earnings of care occupations. More compressed earnings distributions are associated with lower wage penalties for reproductive care workers and lower premiums for high status nurturing care workers.

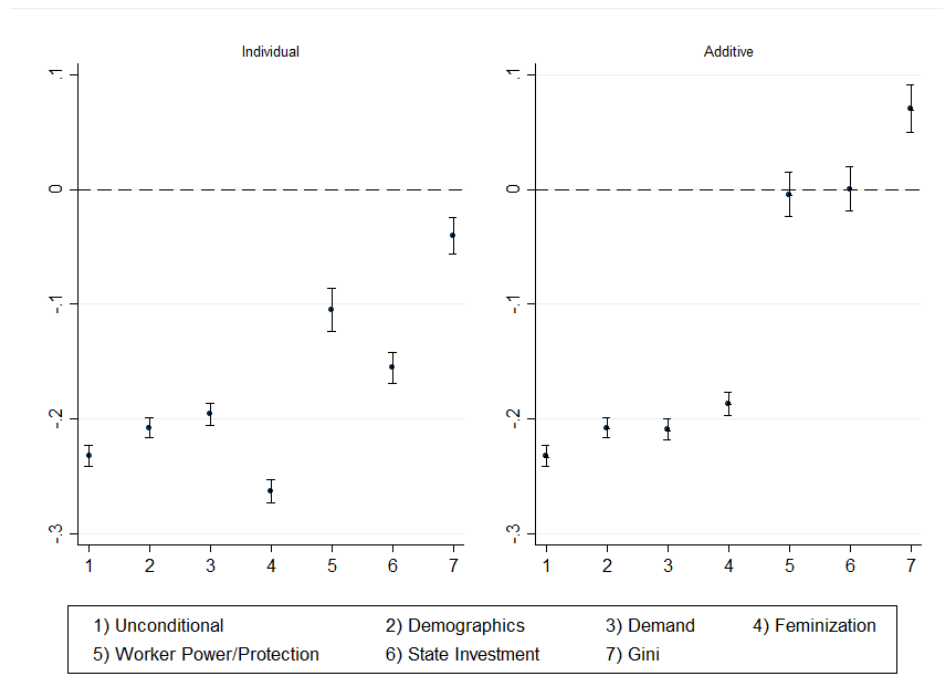
To what extent can these contextual factors explain observed differences in the relative earnings of care occupations across the U.S. and EU? We now turn toward our assessment of the extent to which cross-national variation in relative care earnings can be explained by individual/relational factors, market valuation factors, or the political-institutional factors examined above.

What Explains Differences in Care Earnings Between the U.S. and EU?

The results so far suggest that institutional differences affect the relative earnings of reproductive and high nurturant care occupations, in particular. Are these contextual differences more important than individual or economic perspectives in explaining differences across country in the relative earnings of care workers? Specifically, which perspective best explains why care workers in the U.S. tend to experience more extreme penalties or premiums? We now test this formally, following Equation (3) in the Methods section.

Rather than presenting several sets of long regression tables, we visualize the results in Figure 5. Specifically, Figure 5 plots the penalty for being a reproductive care worker in the U.S. relative to the penalty for reproductive care workers in Europe. In this way, we observe what would happen to cross-national differences in a series of counterfactual scenarios where contextual differences are partially or totally eliminated across the country-sample. The X-axis demonstrates which variables are included in the estimate. The Y-axis then shows the relative penalty for being in the U.S. rather than Europe, conditional on the variables included. The left panel shows the controls added individually, while the right shows them added cumulatively.

Figure 5: U.S. penalty for **reproductive care workers** relative to EU Member States in counterfactual scenarios (2005-2016)



The first indicator shows that the unconditional U.S. penalty for reproductive care workers is around -23 percentage points. Put differently, the average reproductive care worker in the U.S. faces an earnings penalty that is 23 percentage points worse than the average earnings penalty in EU Member States (a look back at Figure 3 confirms this). When controlling for demographics (age, sex, education, citizen, public sector, city center), the U.S. disadvantage penalty declines only to -21 percentage points. This suggests that the individual perspective on the care penalty for reproductive occupations is vastly inadequate; demographic characteristics of reproductive care workers explain very little difference in their relative earnings across country.

Looking at the third and fourth indicators, we see that demand (total employment share of care occupations) and feminization (share of care workers who are female) similarly explain only a small part of the U.S. disadvantage. In contrast, accounting for differences in worker power and EPL (fifth indicator) strongly reduces the U.S. disadvantage for reproductive care workers in the U.S. When added individually (left panel), the U.S. disadvantage declines to 10 percentage points, a more than 50 percent relative reduction from the unconditional models. When added in combination with demographics, demand, and feminization, accounting for collective bargaining coverage and EPL fully explains the U.S. disadvantage for reproductive care workers. Put differently, accounting for cross-national variance in bargaining coverage and EPL can explain why reproductive care occupations in the U.S. face larger earnings disadvantages in the U.S. relative to European countries.

State investment into benefits and services (sixth indicator) also explains a large share of the U.S. advantage (see left panel), though the indicator adds little after bargaining coverage is accounted for (right panel). Finally, accounting for earnings inequality has the strongest

effect on the U.S. disadvantage in relative earnings for care occupations. Controlling for the market earnings Gini coefficient on its own reduces the U.S. disadvantage to 4 percentage points (an 80 percent decline from the unconditional model), as shown in the left panel. When added with all other indicators (right panel), accounting for the Gini coefficient suggests that reproductive care occupations in the U.S. would have higher relative earnings than European counterparts. The broader earnings structure of the labour market, then, appears to have the strongest effect on the U.S. disadvantage for reproductive care occupations, even independent of bargaining coverage, EPL, and state investment.

Similarly, Figure 6 shows that when considering the counterfactual scenarios for high status nurturant care workers, accounting for differences in earnings inequality, labor market and social policy context, the size of the wage premium that Americans receive relative to European counterparts would be eliminated (with the welfare state investment being in this case more important than worker power/protection).

Figure 6: U.S. penalty for **high-level nurturant** care workers relative to EU Member States in counterfactual scenarios (2005-2016)

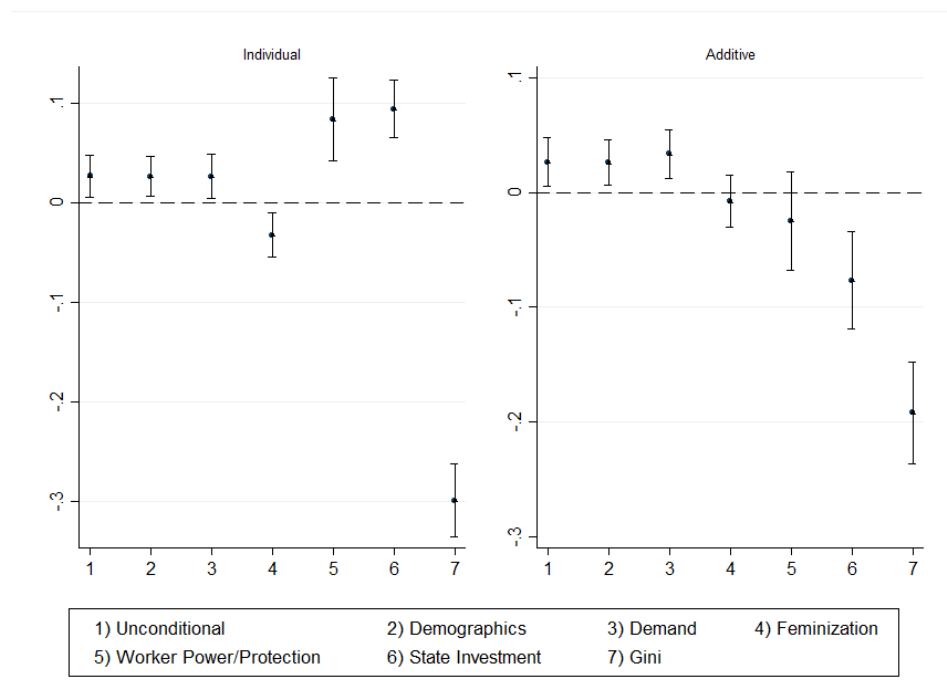
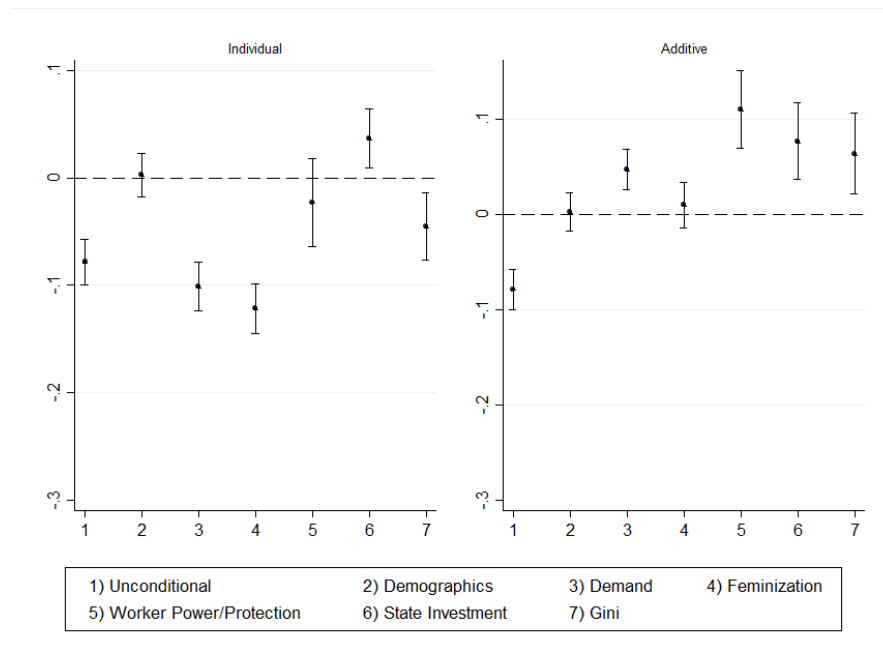


Figure 7 displays the counterfactual scenarios for low status nurturant care workers. Here, we observe that with a similar demographic situation the difference in the penalty of low status nurturant care workers between the United States and Europe would practically disappear. If on top, welfare state investment would be equalized, American workers in low-level nurturant care occupations would be relatively better-off than European equivalents.

Figure 7: U.S. penalty for **low-level nurturant** care workers relative to EU Member States in counterfactual scenarios (2005-2016)



In the Appendix, we also present results from a European perspective. Specifically, we estimate the same models as in Figures 5 through 7, but display how accounting for individual, economic, and political-institutional factors affects the relative earnings of care workers across European regions compared to relative earnings in the U.S.

When considering the additive counterfactual scenarios for European regions, the higher the marker, the greater the relative wage advantage for a reproductive care worker in the given regional cluster compared to the US (Appendix, Figures 1A-3A). The results are broadly similar to our primary analyses. For reproductive care workers, earnings inequality appears to explain most of the differences in the relative earnings between the U.S. and European regions. Interestingly, in continental Europe and in Nordic countries, reproductive care workers would be relatively better off than in the United States even if all contextual differences would be equalized (Figure 1A). Similarly, the wage premium difference for high nurturant care workers would be almost eliminated if all contextual variables would be the same across countries. However, a small additional premium would persist in the United Kingdom, Ireland and Southern Europe (Figure 2A). Finally, for low nurturant care workers some positive difference, when controlling for all scenarios, would remain in Eastern Europe and Baltic countries (Figure 3A).

A final set of insights can be gathered from this analysis. First, most of the difference in the relative earnings of care occupations between the United States and Europe is a matter of earnings inequality, labour market regulation/protection, and welfare state investment. Individual level and economic perspectives of the care penalty have very little explanatory power in cross-national context. Second, in certain cases, some differences in the relative earnings of care workers between European regions and the US would not be eliminated even if the contextual variables we consider in our empirical models would be equalised. In

particular, reproductive care workers would still be relatively better off in continental Europe and Nordic countries, high status reproductive care workers in Southern Europe and UK/Ireland, and low status nurturant care workers in Eastern European and Baltic countries. This indicates that some additional, unmeasured factors still contribute to the relative wage differentials between European regions and the US. Nonetheless, our results make clear that variation in institutional context goes a long way in explaining differences in the relative earnings of care occupations across the US and EU.

Sensitivity Checks

In a sensitivity check, we also evaluate the moderating role of welfare state and labour market institutions on the relative earnings of smaller care occupation categories, such as personal and protective service workers (one half of our reproductive care occupation specification, as outlined in Table 1). The results, presented in Appendix 4 (Figure 4A), suggest that the segmentation of the care occupations does not meaningfully alter our primary conclusions. For both types of reproductive care occupations, for example, we see that higher bargaining coverage is favourable for relative earnings, whereas greater inequality is associated with lower relative earnings. Results are also presented for the two types of low-nurturant occupations and high-nurturant occupations.

CONCLUSION

After a steady increase in employment shares throughout recent decades, reproductive and nurturant care occupations now employ almost a third of the workforce in the United States and Western Europe. Moreover, these occupations are heavily gendered: two-thirds of workers, on average, in such jobs are women. The growth of employment shares for care occupations has outpaced the decline of operators and manufacturers, pointing to the increasing importance of care work in shaping national patterns of earnings and income inequality. Amidst these changes, this study utilized harmonised micro-data from the US and EU between 2005 and 2016 to assess three competing explanations of cross-national differences in the relative earnings of care workers.

Our primary findings show that political-institutional context appears to matter far more than individual, relational, or market valuation factors in explaining cross-national differences in earnings penalties and premiums for care occupations. In particular, stronger employment protection, more widespread bargaining agreements, and larger investments in cash transfers contribute to smaller wage penalties for reproductive care workers. Larger investments into social services seem to moderate the earnings of high and low status nurturant care workers. More broadly, we find that greater earnings inequality contributes to more extreme earnings penalties (for reproductive care workers) and premiums (for high nurturant care workers), independent of the role of collective bargaining, employment protection, and welfare state investment.

Our counterfactual analyses demonstrate that these institutional factors can explain nearly all of the differences in the relative earnings of care occupations between the US and European countries. However, our empirical findings also show that a small earning differential

persists between some European regions and the US even when labour market and social policy context are equalised. This seems to indicate that some unmeasured factors, which might be different for reproductive and nurturing care workers, still contributes to some differences between certain European regions and the United States.

How can the research initiated by this analysis be taken forward? We suggest there are at least two new pathways for future research related to the issues we analysed in this paper. First, our analysis suggests that there is scope to investigate the contribution of the care sector to wage polarization or earnings inequality at the cross-national level (see Dwyer [2013] for the US). In particular, the opposite impact that labour market and social policy context has on the earnings of reproductive versus high nurturant care workers indicates that labour market flexibilization and welfare state retrenchment contribute to wage polarization and/or greater earnings inequality within the care sector. The expansion of the care sector, in conjunction with the decline of industrial jobs, proposes new challenges to societies and invites new perspectives on the study of earnings inequality.

Second, and mostly concerning the social policy literature, our research seems to indicate a potential trade-off between national spending on social services and the earnings of nurturant care occupations. While spending on services contributes to more beneficial social outcomes, (better health care outcomes, conciliation between work and family, support for an ageing population, investment into human capital, and so on), it might also contribute to reduced potential earnings for high and low status nurturant care workers. Future research should investigate the mechanisms at play in more detail to build on the analyses presented in this study.

More broadly, scholars should continue to apply a comparative lens to the study of the relative earnings of care occupations. As this study has demonstrated, cross-national variation in institutional context appears to be the most important factor in shaping differences in the relative earnings of care occupations across the US and EU.

NOTES

¹ Authors' calculations from EU-SILC and U.S. CPS data.

² At the institutional level interesting work has been also recently published concerning how policy-making has contributed to the increase of care worker numbers and in particular domestic workers (see Carbonnier and Morel 2015, Morel 2015, Shire 2015, see also the special issue published by Social Politics in 2015, see Estevez-Abe and Hobson, 2015).

³ Feminist scholars provided several definitions of nurturance, see in particular Abel and Nelson (1990), Cancian and Oliker (2000), Folbre (2001), Noddings et al. (1996), and Tronto (1993).

⁴ Empirically, while high status nurturant care activities are distinct from reproductive care activities in terms of status and qualifications required, the latter can partially overlap with low status nurturant care activities, e.g. child-care or home-based care.

⁵ Based on the theory of compensating differentials Adams Smith (2010 [1776]) developed in the *Wealth of Nations*.

⁶ Devaluation is related to the comparative worth concept and the feminist critique (England 1992; Kilbourne et al. 1994; Sorensen 1994; Steinberg et al. 1986). A similar mechanism operates also for jobs identified as prevalent activities for ethnic minorities (see Kmec 2003).

⁷ The outlier status of Romania and Portugal may be due to higher shares of informal care work in these two countries. Our primary findings are robust when we exclude these two countries from our analysis.

⁸ This finding echoes conclusions from Mandel and Semyonov (2006) on the difference between maternal wages in Nordic and Liberal countries.

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Appendix

Table 1A: Descriptive statistics

Variable	Mean	Standard Dev.	Min.	Max.
High Education	33.0%	47.0%	0	1
Low Education	23.1%	42.1%	0	1
Age	42.2	12.1	0	85
Employed Part-Time	15.7%	36.3%	0	1
Male	53.1%	49.9%	0	1
Public Sector	23.8%	42.6%	0	1
City Center	31.7%	46.5%	0	1
Reproductive Care	14.4%	35.1%	0	1
High Nurturant Care	8.4%	27.8%	0	1
Low Nurturant Care	3.7%	18.8%	0	1
Spending: Services (SD)	-0.33	1.27	-3.24	3.02
Spending: Cash (SD)	0.13	0.99	-1.83	2.22
Employment Protection Legislation (SD)	0.20	0.93	-1.69	2.18
Bargaining Coverage (SD)	0.40	1.13	-0.89	2.17
Female Share of Care Jobs (SD)	0.30	1.21	-5.05	3.05
Employment Share of Care Occs. (SD)	0.00	0.77	-2.44	1.55
Gini Coefficient (SD)	-0.43	1.13	-3.16	1.09

Figure 1A: EU penalties/premiums for reproductive care workers relative to U.S. in counterfactual scenarios (2005-2016; counterfactuals estimated additively)

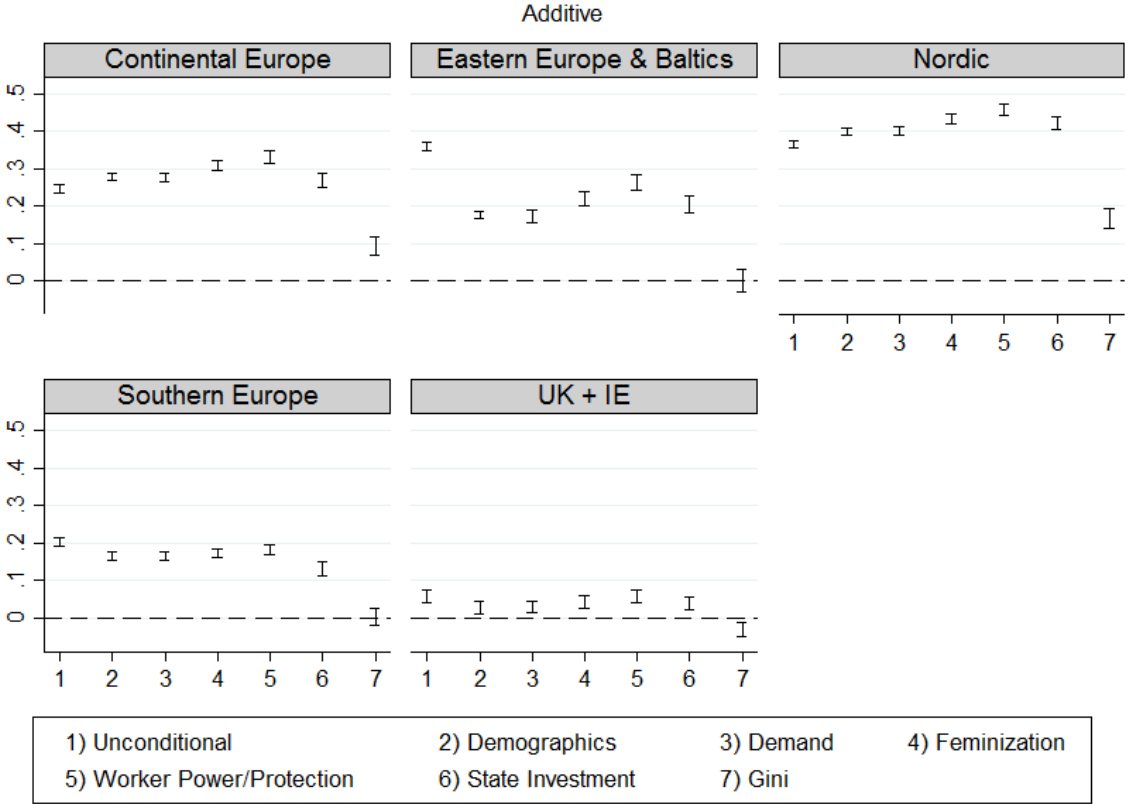


Figure 2A: EU penalties/premiums for **high-level nurturant** care workers relative to U.S. in counterfactual scenarios (2005-2016; counterfactuals estimated additively)

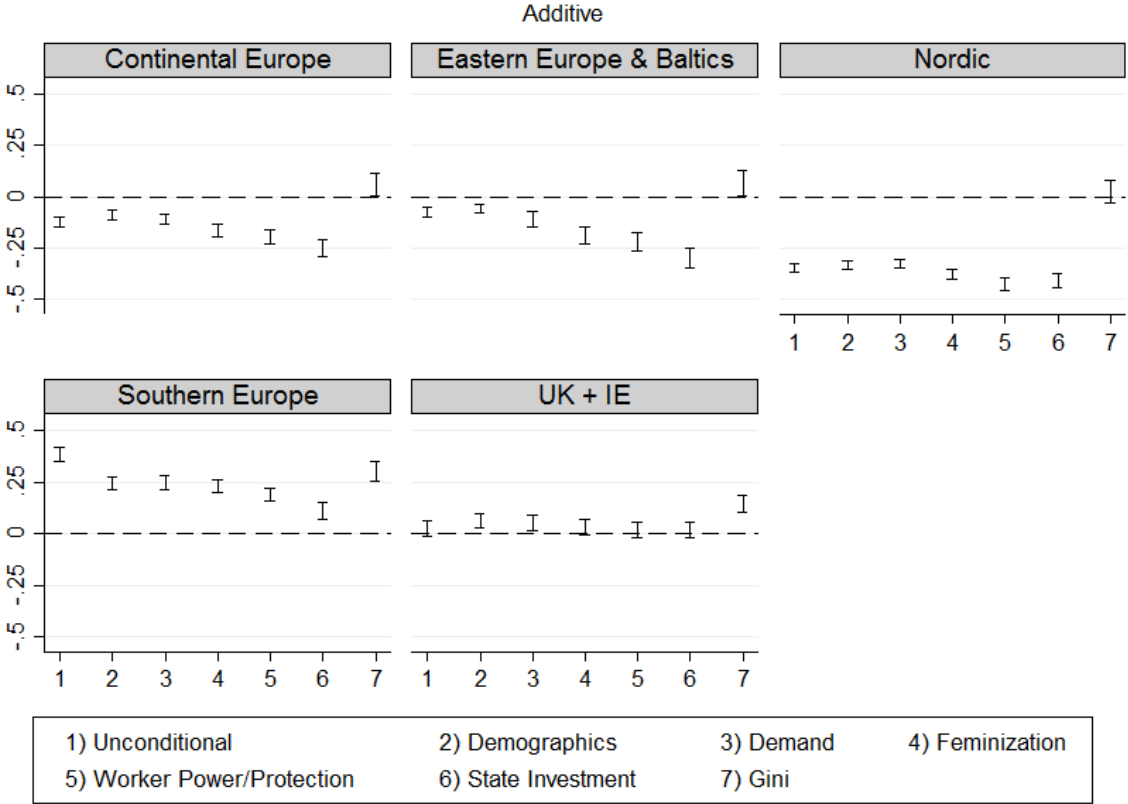


Figure 3A: EU penalties/premiums for **low-level nurturant** care workers relative to U.S. in counterfactual scenarios (2005-2016; counterfactuals estimated additively)

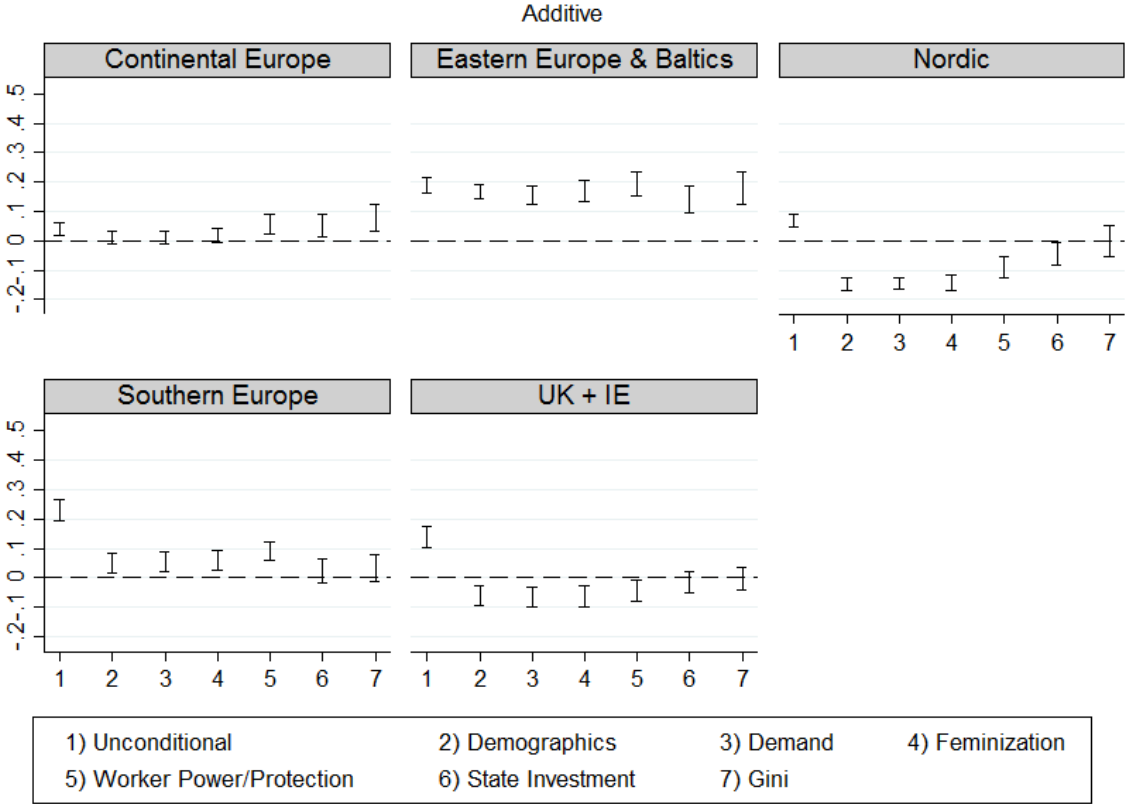
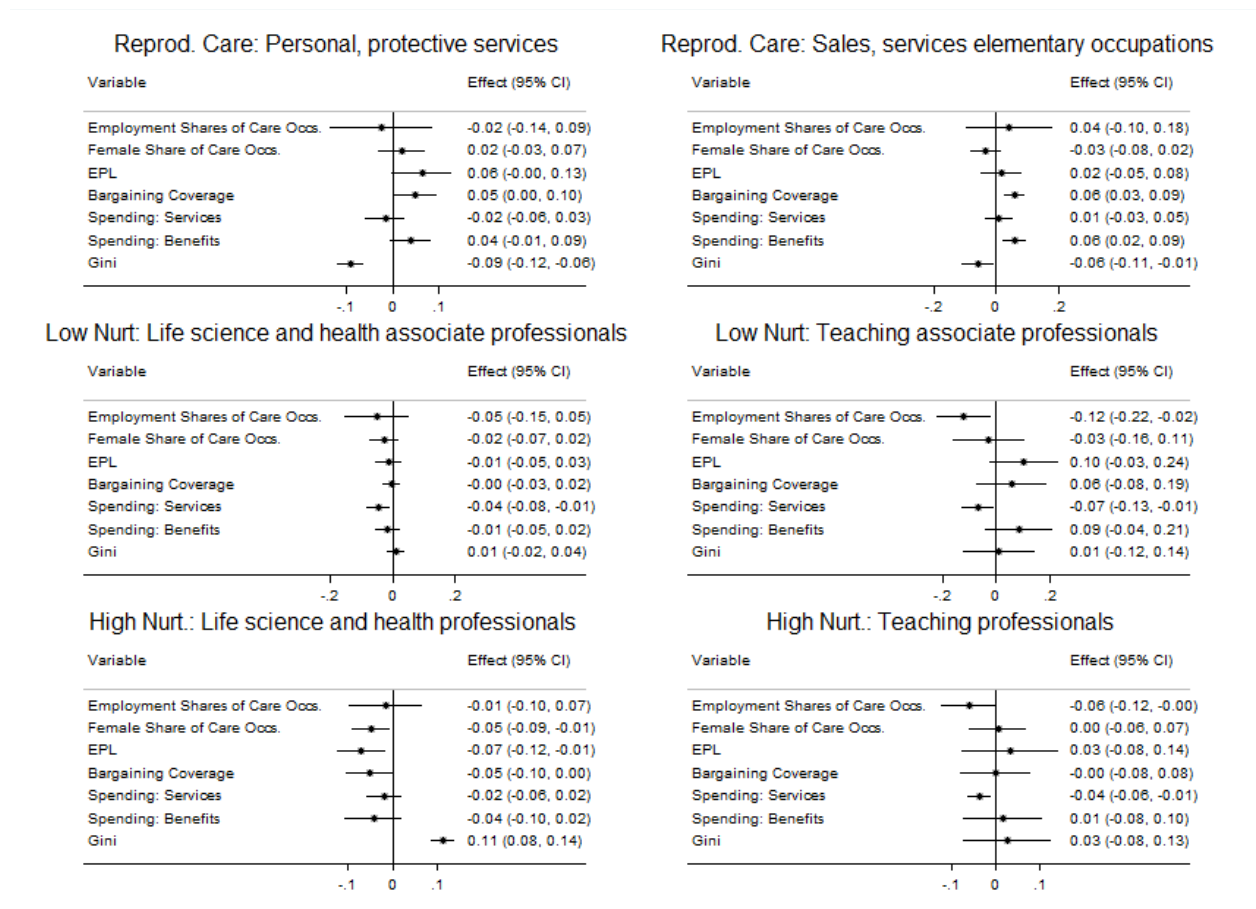


Figure 4A: Moderators of earnings for specific subsets of care occupations (results from two-way fixed effects models)





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